The Role of the Two-Factor Model of Impulsivity and Conscientiousness in Risk-Taking and Harm Reduction Behaviours among Regular Ecstasy Users

by

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B.Sc.(Psych), PostgradDip(Psych)

Submitted in partial fulfillment of the requirements for the Degree of

Doctor of Psychology (Clinical)

University of Tasmania

June, 2011

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The research associated with this thesis abides by the international and Australian codes on human and animal experimentation and the guidelines by the Australian Government's Office of the National Health and Medical Research Council *National Statement on Ethical Conduct in Human Research (2007).* Approval was granted by the Human Research Ethics Committee (Tasmania) Network.

Acknowledgements

First and foremost I gratefully acknowledge the supervision of Dr. Raimondo Bruno for his generous support, expertise, guidance and flexibility. I would also like to recognise and thank Dr. Bruno and the Psychopharmacology and Clinical Psychopathology (PCP) Lab Group for the provision of necessary funds and facilities for this project. Thank you to Dr. Allison Matthews and the Ecstasy and Other Drugs Reporting System (EDRS) for allowing me to participate in collecting data and being involved with the EDRS. I also acknowledge the many internet drug forum websites that allowed me to advertise my research and participate in their online forums, and to the many forum users, thank you. Thank you as well to Dr. Jennifer Scott, for providing your expertise and revisions in relation to this project.

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Abstract

Previous research has shown the personality factors of impulsivity and conscientiousness are linked to engagement in health related risk-taking behaviours in the general population. Study 1 aimed to investigate how useful the personality traits of rash-spontaneous impulsivity (as conceptualised by Dawe and Loxton's (2004) two factor model of impulsivity) and conscientiousness were in differentiating between regular (at least monthly) ecstasy users (REU) who engaged in additional risk-taking behaviours (e.g., sexual risk-taking, drug driving) versus REU who did not, as well as their ability to predict REU's engagement in additional risk-taking behaviours. Rash-spontaneous impulsivity scores were significantly higher in REU deemed at risk for the categories of sexual, alcohol driving and binge risk. Interestingly, rash-spontaneous impulsivity scores were significantly lower in REU who engaged in injecting risk-taking behaviours than REU who did not. In a predictive fashion, rash-spontaneous impulsivity successfully predicted REU who drove under the influence of alcohol, cannabis and party drugs. There were no differences in conscientiousness scores between REU who engaged in risk-taking behaviours versus REU who did not for any domain of risk-taking, and conscientiousness did not predict engagement in any risk-taking behaviour. On a whole, findings from Study 1 contributed to the validity of models that implicate rash-spontaneous impulsivity in contributing to substance use and risk-taking behaviours, whilst providing contrary results to models that implicate conscientiousness' role in protecting against risk-taking behaviours. Whilst this study was exploratory in nature, these preliminary findings suggest that the rash-spontaneous factor of impulsivity plays a role in risky behaviours over and beyond regular ecstasy use.

Study 2 aimed to further investigate the extent to which both factors of Dawe and Loxton's (2004) model of impulsivity, rash-spontaneous impulsivity and reward sensitivity, as well as conscientiousness were able to predict engagement in risk-taking behaviours as well as harm reduction behaviours in a larger, online sample of REU. Study 2 also measured and controlled for the role that attitudes towards sex and driving practices may play in predicting sexual and driving risk-taking behaviours. Results indicated that riskier attitudes towards safer sex were predictive of a greater frequency of engagement in risky sexual behaviours. Notably, driving attitudes were not successful predictors of drug driving behaviour. In relation to personality, rash-spontaneous impulsivity was a significant predictor of injecting risk-taking behaviours, and it approached significance in relation to predicting binge and overdose risk-taking behaviours. Additionally, rash-spontaneous impulsivity was a significant predictor of harm reduction behaviours in an inverse fashion. Reward sensitivity and conscientiousness were not significant predictor variables in relation to any domain of risk-taking or of engaging in harm reduction behaviour. On a whole, findings from Study 2 contributed to the validity of models that implicate rash-spontaneous impulsivity in substance use and risk-taking behaviours, whilst providing contrary results to the involvement of reward sensitivity and conscientiousness. The clinical application and usefulness of these results regarding the development and implementation of harm reduction programs are discussed.

The Role of the Two-Factor Model of Impulsivity and Conscientiousness in Risk-Taking and Harm Reduction Behaviours among Regular Ecstasy Users

Thesis Rationale and Aims

Through two separate research studies, the current thesis seeks to examine the role Dawe and Loxton's (2004) two-factor model of impulsivity and conscientiousness may play on predicting regular ecstasy users' (REU) engagement in other health related risk-taking behaviours (e.g., sexual risk-taking and drug driving), over and beyond regular ecstasy use, as well as REU's engagement in harm reduction behaviours.

Study 1 investigates the usefulness of rash-spontaneous impulsivity and conscientiousness in differentiating between REU who engaged in risk-taking behaviours versus REU who did not, as well as their ability to successfully predict REU's engagement in risk-taking behaviours. Study 2 investigates the usefulness of both factors of impulsivity, rash-spontaneous and reward sensitivity, as well as conscientiousness in predicting REU's engagement in risk-taking behaviours. Additionally, Study 2 measures and controls for the sexual and driving attitudes of REU, and includes an attempt to predict engagement in harm reduction practices in addition to involvement in risk-taking behaviours.

The literature review and introduction to Study 1 contains chapters of background information and previous research regarding ecstasy and its known effects, relevant models of personality, the personality factor of rash-spontaneous

impulsivity and the personality factor of conscientiousness. The introduction to Study 2 contains background information and previous research regarding the second proposed factor of impulsivity, reward sensitivity, the role of attitudes on behaviour and harm reduction practices employed by REU.

Chapter 1: Ecstasy: An Introduction

The use of mind altering substances is a centuries old practice that has been part of virtually every culture and society throughout the world. Recently, the Australian Institute of Health and Welfare (AIHW, 2008) surveyed nearly 25,000 Australians in relation to their lifetime and recent use of licit and illicit drugs. Results revealed that 90% of Australians aged 14 and older had tried alcohol at some point in their lives, with 83% consuming alcohol in the 12 months prior to the survey. With regards to illicit substances, almost 2 in every 5 Australians aged 14 and older (38%) had used an illicit drug at some point in their life, with more than 1 in 7 (13%) having used an illicit drug within the preceding 12 months. The most commonly reported illicit drug used in the previous 12 months was cannabis (9%), followed by ecstasy (4%), the drug at the focus of this research (AIHW, 2008).

3,4-Methylenedioxymethamphetamine (MDMA) or 'ecstasy' was originally synthesised by a German scientist in 1912, becoming patented in 1913. Despite a lack of any meaningful, controlled clinical trials, it is believed that human consumption began in the late 1960s, with many psychotherapists using it with their patients as a regular part of therapy to enhance communication and lower inhibitions. By 1984 ecstasy was still legal and its use was widespread among youth in North America. Ecstasy is thought to have come to Australia in 1984-85, with its popularity taking off in 1989-90. It is said that the widespread and unashamed use of ecstasy brought about its downfall, in addition to emerging research that the drug was indeed not harmless (ABC, 2001). In 1985 the US Drug Enforcement Agency

made ecstasy a controlled substance, with Australia following suit in 1987 (ABC, 2001; NIDA, 2001).

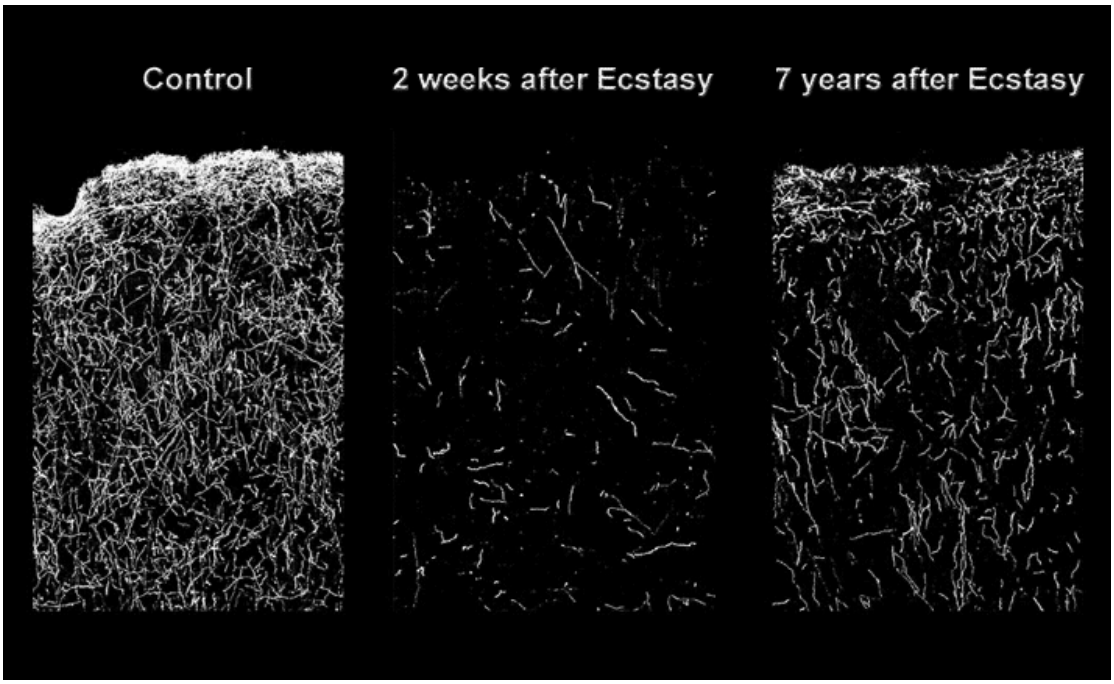
MDMA is a chemical belonging to the amphetamine family. It has properties of both stimulant and hallucinogenic drugs, in that it increases the speed of activities in the nervous system, and users may also experience distorted perception (ADF, 2006; NIDA, 2001). The majority of users take ecstasy orally in a tablet or capsule form, but the drug may also be taken as a powder, smoked, injected or snorted. A 'typical' dose of ecstasy has been reported to contain between 60-120 milligrams of MDMA (NIDA, 2001), or 80-150 milligrams of MDMA (Oesterheld, Armstrong & Cozza, 2004). However, in reality, the pharmacological content of drugs sold and consumed as ecstasy could contain any combination of a number of various substances that may or may not be related to MDMA. For the purposes of this paper, the term ecstasy will be used to describe the drug that people consume intentionally as they believe to be MDMA, regardless of the actual drug content.

Pharmacologically, MDMA works in the brain by increasing the activity of particular neurotransmitters. It is known that MDMA triggers a large increase in release of the neurotransmitter serotonin (5-hydroxytryptamine, or 5-HT), causing an atypical flood of serotonin into the synapse. MDMA also prevents the re-uptake of serotonin, allowing it to remain in the synapse for a longer period of time. In addition, MDMA stimulates the release of the neurotransmitter dopamine, although to a lesser extent than serotonin (NIDA, 2001).

The impact of MDMA on dopaminergic neurons appears to be transient, whilst its impact on serotonergic neurons appears to be longer lasting (NIDA, 2001). Evidence from both animal and human studies suggests that one long-term consequence of MDMA use is a persistent, significant depletion of serotonin levels (see Figure 1) (NIDA, 2001; Evenden, 1999; Hatzidimitriou, McCann & Ricaurte, 1999; Reneman, Endert, Bruin, Lavalaye, Feenstra, Wolff, & Booij, 2002; Saadat, Elliot, Green, & Morgan, 2006; Morgan, 1998). Therefore, current evidence suggests that MDMA is neurotoxic in relation to serotonin neurons, causing irreparable damage to serotonin axons and serotonergic axon terminals, as well as reducing the number of serotonin transporters and causing the loss of serotonin uptake sites (Copeland, Dillon & Gascoigne, 2004; McCann, Szabo, Scheffel, Dannals & Ricaurte, 1998; NIDA, 2001). As McCann and colleagues (1998) conclude, 'people who use MDMA as a recreational drug are unwittingly putting themselves at risk of developing brain 5-HT neural injury.'

Figure 1

Serotonin depletion in squirrel monkeys, persisting after seven years. Dark-field photomicrograph of serotonin axons in the frontal cortex of a control squirrel monkey, two weeks post MDMA treatment and 7 years post MDMA treatment (Hatzidimitriou, McCann & Ricaurte, 1999).



The serotonin neurotransmitter system (Figure 2) is one of the most widespread in the central nervous system, extending from the brain stem and lower brain regions to virtually every region throughout the rest of the brain, with exception of the cerebellum. Brain serotonin neurons have been shown to be heavily involved in mood regulation, as well as playing a role in memory and cognition, impulse control, aggression, appetite / thirst control, sexual function, body temperature, sleep and hormonal control (NIDA, 2001).

Following consumption of MDMA, serotonin is released in large amounts, which results in temporary amplified feelings of elation, joy and an overall sense of well-being. However, by releasing large amounts of serotonin, MDMA causes the brain to become significantly depleted of serotonin, contributing to unpleasant

‘comedown’ symptoms, which may include mood fluctuations, poor concentration, loss of energy, irritability, restlessness, nausea, chills, sweating, teeth clinching, muscle cramping and blurred vision (Curran & Travill, 1997; Degenhardt & Hall, 2010; NIDA, 2008; NIDA, 2001). These effects are typically transient with recovery usually occurring 1 – 3 days later (Curran & Travill, 1997; Degenhardt & Hall, 2010).

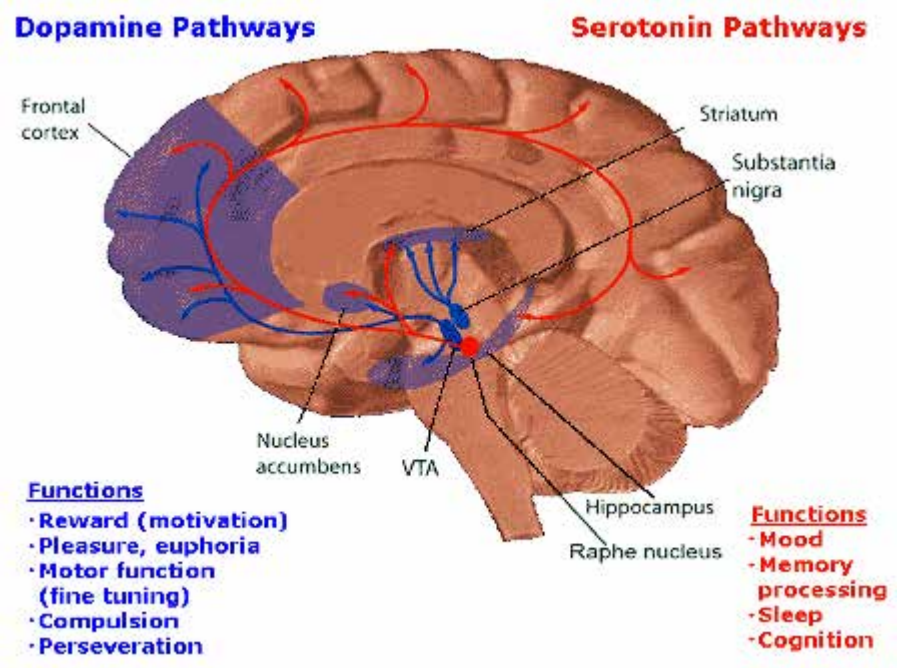
MDMA also acutely affects the dopamine neurotransmitter system (Figure 2). Dopamine is a neurotransmitter present in regions of the brain that regulate movement, emotion, cognition, motivation and feelings of pleasure. The dopamine system rewards natural behaviours, such as eating and sex, by producing pleasant effects. MDMA acutely increases synaptic dopamine levels; however, these increases are generally smaller than serotonin increases (Degenhardt & Hall, 2010; NIDA, 2008).

Dopamine is involved in various pathways throughout the brain, one of which is the mesolimbic pathway. This pathway begins in the ventral tegmental area of the midbrain and connects to the limbic systems via the nucleus accumbens. This pathway is known to be involved in modulating behavioural responses to stimuli that activate feelings of reward and reinforcement (Stahl, 2008). Activation of the mesolimbic dopamine system has been argued to represent a neuronal substrate for the rewarding or reinforcing properties of drugs of abuse (Jentsch & Taylor, 1999). Initially, drug use produces a sensitization of the mesolimbic dopaminergic system that results in an increase over time in the incentive value of the drug itself, as well as drug-related conditioned stimuli. This involves an increase in ‘‘wanting’’ drugs

that occurs through a sensitizing or hyper-responsivity of motivational processes in response to drug cues. It is this reinforcement value that is thought to contribute to drug dependence, cravings and relapse (Dawe, Gullo & Loxton, 2004). The effects of drugs within these cortical regions is also believed to underlie some of the alterations in learning, memory, attention and cognition that are associated with long-term drug use (Jentsch & Taylor, 1999).

Figure 2

Serotonin and Dopamine Pathways in the Brain (Ensor, 2005)



Despite its illegality and long-term adverse effects, the popularity of ecstasy has been increasing. The AIHW (2008) national survey revealed that in Australia, the use of ecstasy has risen significantly over recent years, from 2.4% of the population having reported to have ever used ecstasy in 1995, to 8.9% reporting they had used the drug in 2007. In terms of recent use of ecstasy (use in the 12 months

prior to survey), the prevalence of ecstasy use rose from 0.9% in 1995 to 3.5% in 2007. Of Australians aged 18-19 who had ever used illicit drugs, 9.1% of them had used ecstasy, second only to cannabis (19%). Furthermore, in 2007, the group most likely to have ever used ecstasy were 20-29 year old males (25.7%), with 13.8% of this group reporting recent ecstasy use. For males and females collectively, the 20-29 year age group had the highest prevalence of recent ecstasy use (11.2%) than any other age group.

Ecstasy: Two Distinct Groups of Users?

Human beings are indeed complex, as are the influences that contribute to why people behave as they do. Specifically, why some individuals partake in risk-taking behaviours whilst others do not poses an interesting and important research question. In the realm of alcohol and drug research, understanding the differences that distinguish between risk-takers and non risk-takers is of particular interest, as the implications of engaging in risk-taking behaviour whilst under the influence of substances may not only affect the individual, but society at large.

Most people accept the idea that individuals who consume an illicit drug such as ecstasy are engaging in risk-taking behaviour, however calculated that risk may be. Within this population of people who may collectively and loosely be described as risk-takers, it is interesting that research shows (e.g., Matthews & Bruno, 2006) that only some of these individuals engage in other risk-taking behaviours, such as unsafe sexual practices or driving under the influence of alcohol and / or other drugs. Therefore, within this collective group of risk-takers, there appears to be two distinct

sub-groups – those individuals who regularly consume ecstasy but do not partake in other risk-taking behaviours, and those individuals who regularly consume ecstasy as well as engaging in other risk-taking behaviours.

There could be many influences as to why an individual who regularly takes ecstasy chooses to engage or not engage in other risk-taking behaviours. Sex and age are probable influences. Another such influence may be that the individual engages in risk-taking behaviours due to a side effect of the drug(s) itself; for example, experiencing disinhibition when under the influence of alcohol. An individual's attitudes towards the behaviour are also likely to be important. However, in addition to these influences, it also stands to reason that there is something intrinsic within the individual, something in their personality, which may either be a contributing or protective factor with regards to the extent to which the individual engages in other risk-taking behaviours.

The current research focuses on this final influential factor, in that it aims to determine what characteristics of personality may distinguish between regular consumers of ecstasy who engage in other risk-taking behaviours versus those who do not. Research of this type is important to determine if personality factors can differentiate and potentially predict membership of these two groups. Results of this research may assist in the development of harm reduction programs, in that the results may provide guidance in choosing not only who to target, but how to target individuals who are deemed at risk based on these characteristics, thus providing valuable information to ensure intervention programs are successful.

Chapter 2: Models of Personality

This chapter aims to review key models of personality and how they potentially relate to explaining differences between REU who engage in risk-taking behaviours versus REU who do not.

There are many diverse theories of personality that have been proposed by a range of philosophers and psychologists over the centuries. Despite fundamental differences between theories, the goals of each personality theorist are the same – to postulate a theory of personality that depicts what human beings are like, and to explain why individuals are like the way they are. With these common goals, all personality theories therefore attempt to explain both human nature and individual differences. The differences between personality theories are largely due to theorists offering diverse descriptions, explanations and methodologies, with each theorist using their own language and terms in order to describe their unique personality theory. However, despite the varied personality theories that abound, elements that are generally focused upon in most personality theories include the role of genetics, traits, culture / society, learning, personal choice, unconscious mechanisms and / or cognitive processes (Hergenhahn & Olson, 1999).

There are several theories of personality that are particularly pertinent to the current discussion of risk-taking behaviours amongst individuals who regularly use ecstasy. This paper will focus on theories postulated by Eysenck, Costa and McCrae, Gray and Cloninger, each described below. Other health models, such as the Health Belief Model (Rosenstock, 1966) and the Theory of Planned Behaviour

(Ajzen & Fishbein, 1980) may well have explanatory power in relation to health risk-taking behaviour, and are discussed in detail in subsequent chapters relating to Study 2.

Eysenck's Three Factor Model of Personality

Eysenck developed his initial theory of personality in the 1940s, making revisions throughout the 1970s. He emphasised empirical determination and measurement of basic psychological qualities possessed by all people, as he was primarily concerned with explaining the personality of normal adults as opposed to psychopathology. His measures include the Eysenck Personality Inventory (EPI), the Eysenck Personality Questionnaire (EPQ) and the Revised EPQ (EPQ-R) (Hergenhahn & Olson, 1999).

Eysenck's model of personality placed importance on the role that biological and genetic factors have on determining personality. His theory is based primarily on two neurobiological systems: the ascending reticular activating system (ARAS) and the limbic system (of which Eysenck referred to as the visceral brain). The ARAS is responsible for patterns of excitation and inhibition of the cerebral cortex, whilst the limbic system regulates emotional expression and controls autonomic responses such as heartbeat, blood pressure and sweating (Hergenhahn & Olson, 1999).

The focus of Eysenck's theory is the concept of temperament, defined as the emotional, motivational and non-ability related cognitive aspects of behaviour. With

this focus, Eysenck believed important traits are those that are relatively permanent, have clear biological origins and that influence secondary behavioural patterns acquired through learning. In other words, he postulated that traits are biologically influenced by the ARAS and limbic system, rather than being learned (Hergenhahn & Olson, 1999).

Eysenck based his personality theory on the statistical technique of factor analysis, and his model and associated measures are hierarchical in nature. A hierarchical model is one in which items at the narrowest level are factor analysed to derive factors at the second level, these factors are again factor analysed to derive factors at the third level, and so forth. At the bottom and narrowest level of Eysenck's hierarchy are behaviours, such as talking with a friend on a single occasion. At the second level are recurring behaviours, called habits, such as talking with friends on multiple occasions. As people who engage in one type of behaviour tend to engage in other similar behaviours, at the third level are intercorrelated sets of habits, called traits, such as the construct of sociability. At the top of Eysenck's hierarchy are intercorrelated sets of traits, called types or superfactors, such as extraversion. In this statistical manner, Eysenck theorised there are three superfactors to describe human personality: extraversion, neuroticism and psychoticism. Each of these dimensions of personality, described in more detail below, is orthogonal, meaning they are independent of one another (Acton, 2003; Hergenhahn & Olson, 1999).

Extraversion

Eysenck's first factor, extraversion (vs. introversion), is the degree to which a person is outgoing, talkative, has a high degree of positive affect, is interactive with other people and desires external stimulation (Acton, 2003). Individuals with high scores on the extraversion dimension may be characterised as active, sociable, expressive, assertive, ambitious, enthusiastic, spirited, vivacious and zestful (Costa & McCrae, 1995).

According to Eysenck's arousal theory of extraversion, different degrees of extraversion may be attributed to different levels of arousal in the cerebral cortex. Arousal can be measured by skin conductance, brain waves or sweating. There is some 'optimal' level of cortical arousal, and performance deteriorates as one becomes more or less aroused than this optimal level. Thus, at very low and very high levels of arousal, performance is low, but at a more optimal midlevel of arousal, performance is maximised (Acton, 2003). According to Eysenck's theory, individuals with a high degree of extraversion are believed to have low levels of cortical arousal, while individuals with a high degree of introversion (i.e., low extraversion) are believed to have high levels of cortical arousal. Due to this underlying difference in brain physiology, it is theorised that extraverts seek excitement and social activity in an effort to heighten their arousal level to an optimal level of performance, while introverts tend to avoid excitement and social activity and need peace and quiet in an effort to keep arousal at a minimum (Hergenhahn & Olson, 1999).

Neuroticism

Eysenck's second factor, neuroticism (vs. emotional stability), is the enduring tendency to experience negative emotional states such as depression and anxiety (Acton, 2003). Individuals with high scores on the neuroticism dimension may be characterised as anxious, unhappy, dependent, hypo-chondriacal, guilty, obsessive, fearful, nervous and having inferior self-esteem (Costa & McCrae, 1995).

Neuroticism, according to Eysenck's theory, is based on activation thresholds in the sympathetic nervous system, the part of the brain that is responsible for the fight or flight response in the face of danger. Activation of this system can be measured by heart rate, blood pressure, cold hands, sweating and muscular tension. Eysenck postulated that individuals with a high degree of neuroticism have low activation thresholds for the sympathetic nervous system, and therefore experience negative affect in the face of relatively minor stressors. This theory postulates that individuals that are high on neuroticism are more sensitive to environmental stimulation and often do not perform well or experience negative affect under pressure. On the contrary, those who are low on neuroticism have high sympathetic nervous system activation thresholds, and therefore experience negative affect only in the face of major stressors. These people often react calmly and coolly when under pressure. Neuroticism can be distinguished from negative affect itself, in that those disposed to experience negative affect (e.g., anxiety) may tend to avoid situations that cause it (Acton, 2003; Hergenhahn & Olson, 1999).

Psychoticism

Individuals with high scores on Eysenck's third factor, psychoticism (vs. impulse control), may be characterised as tough minded, nonconformists, uncooperative, hostile, risk-takers, manipulators, sensation seekers, being irresponsible and behaving in an impulsive manner. Although Eysenck also maintained that this factor is also intended to assess a predisposition to psychotic disorders, Costa and McCrae (1995) suggest it measures something closer to a lack of conventional socialization, in that high scorers are guided neither by sympathy for others, nor by respect for rules. The physiological basis suggested by Eysenck for psychoticism involves high levels of testosterone and low monoamine oxidase enzyme levels; however, these are not well established (Acton, 2003; Hergenhahn & Olson, 1999; Jang, 1998; Costa & McCrae, 1995).

In summary, Eysenck's model of personality, derived from factor analysis and grounded in neurobiology, maintains there are three crucial factors that describe human personality: extraversion, neuroticism and psychoticism. In applying Eysenck's theory, the development of personality is directed by genetically endowed traits but is tempered by environmental factors. Eysenck maintained that person variables (genetics and biological dispositions) and situation variables always interact to cause behaviour. Therefore, personality traits influence the kinds of situations individuals find aversive and avoid, as well as those that individuals enjoy and seek. Because our personalities guide us toward some environments and turn us away from others, our personalities can influence the kinds of behaviours, experiences and learning that we encounter (Hergenhahn & Olson, 1999).

In relation to the current study, Eysenck's theory of personality provides a reasonable explanation as to why some individuals may take ecstasy, as well as why some may take part in other risk-taking behaviours. Based on Eysenck's theory, the risk-taker as subject in this research may be particularly well explained by the extraversion and psychoticism factors, in that persons with low cortical arousal (i.e. extraverts) seek sensation and excitement, and persons high in psychoticism are characterised as sensation seekers and risk-takers. Therefore, Eysenck's theory would imply that regular consumers of ecstasy who partake in risk-taking behaviours are likely to score high on the extraversion and psychoticism factors.. For example, while this has not been examined directly in ecstasy consumers, in a study comparing never, current and ex- tobacco smokers on the EPQ-R, Arai, Hosokawa, Fukao, Izumi and Hisamichi (1997) found that current and ex-smokers scored higher on the extraversion and psychoticism scales than never smokers for both sexes. Heavy smokers and those who commenced smoking prior to the legally permitted age scored higher on the psychoticism scale than light smokers and those who started smoking after the legally permitted age. Therefore, both the extraversion and psychoticism factor appeared to have played a part in this risk-taking behaviour.

The Five Factor Model of Personality

The Five Factor Model (FFM) of personality, developed by Costa and McCrae (1992), offers an alternative theory as it postulates there are five factors that are required to describe human personality, as opposed to Eysenck's three. The FFM traits are grounded in a comprehensive biosocial model that includes a genetic and environmental position on causation of behaviour. The five factors are measured by

the Revised Neuroticism, Extraversion, Openness Personality Inventory (NEO-PI-R) (Costa & McCrae, 1992; Goldberg, 1993; Zuckerman, Kuhlman, Joireman, Teta & Kraft, 1993).

The FFM, like Eysenck's model, is based on the statistical method of factor analysis and is hierarchical in nature. The FFM organises personality traits into five broad domains: extraversion, neuroticism, conscientiousness, openness to experience and agreeableness, each described below (Bogg & Roberts, 2004).

Extraversion

Extraversion in the FFM is essentially identical to Eysenck's description. To briefly summarise, extraversion is the degree to which a person is outgoing and interactive with other people, as well as indicating the individual's proneness towards positive emotions and sociability (Lynam, Leukefeld & Clayton, 2003). People with a high degree of extraversion are characterised by energy, positive emotions and the tendency to seek stimulation and the company of others. In the FFM, extraversion has been associated with higher sensitivity in the mesolimbic dopamine system to potentially rewarding stimuli (Goldberg, 1993; Lynam, Leukefeld & Clayton, 2003), whereas in the Eysenck model different degrees of extraversion are attributed to the more global assessment of different levels of arousal in the cerebral cortex (Hergenhahn & Olson, 1999).

Neuroticism

Neuroticism in the FFM is again essentially identical to the description in the Eysenck model. To briefly summarise, neuroticism refers to the tendency to experience negative emotions. Individuals with a high degree of neuroticism tend to experience a range of unpleasant emotions easily, are emotionally reactive and respond emotionally to events that would not affect people with a lower degree of neuroticism (Lynam, Leukefeld & Clayton, 2003; Goldberg, 1993).

Conscientiousness

The conscientiousness factor of the FFM is concerned with the way people control, regulate and direct impulses. A high degree of conscientiousness is characterised by a tendency to show self-discipline, act dutifully and aim for achievement. Highly conscientiousness people have a high ability to plan, organise and complete tasks and tend to mostly engage in planned rather than spontaneous behaviour. High scorers on this factor may be characterised as organised, thorough and reliable, whereas low scorers on this factor may be characterised as careless, negligent and unreliable (Lynam, Leukefeld & Clayton, 2003; Goldberg, 1993).

Openness to Experience

The openness to experience factor describes the imaginative and creative aspects of personality. Individuals who score high on this factor are characterised as open, imaginative, curious, interested in culture, have an appreciation for art,

emotion, adventure, and unusual ideas as well as enjoying a variety of experiences. Higher levels of openness to experience have been linked to activity in the ascending dopaminergic system and the functions of the dorsolateral prefrontal cortex (Lynam, Leukefeld & Clayton, 2003; Goldberg, 1993).

Agreeableness

Agreeableness describes the degree to which a person is concerned with cooperation and social harmony. Individuals with a high degree of agreeableness have a tendency to be compassionate and cooperative, rather than being suspicious and antagonistic towards others. Individuals who score high on the agreeableness factor value getting along with others, and are generally trusting, straightforward, empathic, considerate, generous, friendly, and have an optimistic view of human nature. People who score low on the agreeableness factor tend to be characterised as arrogant, hostile, selfish, manipulative, and unconcerned about others (Lynam, Leukefeld & Clayton, 2003; Goldberg, 1993).

When viewed hierarchically, the FFM does not intend to reduce the complex tapestry of personality to a mere five traits; rather, it seeks to provide a framework in which to organise the many individual differences that characterise humankind. As such, the five broad domains of the FFM incorporate hundreds, if not thousands, of traits (Goldberg, 1993). Costa and McCrae (1995) proposed six facets within each domain on the basis of their research with the NEO-PI-R, described in Table 1 below (Lynam, Leukefeld & Clayton, 2003). Facets of particular interest to the present research, such as excitement-seeking, deliberation and impulsiveness, are italicised.

Table 1

Description of Facets within the Five Factor Domains (Lynam, Leukefeld & Clayton., 2003)

Domain	***Descriptor***
Extraversion	
Warmth	affectionate, attached vs. cold, aloof, reserved, indifferent
Gregariousness	sociable, outgoing vs. withdrawn, isolated
Assertiveness	enthusiastic, forceful vs. unassuming, quiet, resigned
Activity	active, energetic, vigorous vs. passive, lethargic
Excitement-Seeking	*adventurous, rash vs. cautious, monotonous, dull*
Positive Emotions	high-spirited vs. placid, anhedonic
Neuroticism	
Anxiousness	*fearful, apprehensive vs. relaxed, unconcerned, cool*
Angry Hostility	bitter, angry vs. even-tempered
Trait Depression	pessimistic, glum, despondent vs. optimistic
Self-Consciousness	timid, embarrassed vs. self-assured, glib, shameless
Impulsiveness	*tempted, reckless vs. controlled, restrained*
Vulnerability	*fragile, helpless vs. stalwart, brave, fearless*
Conscientiousness	
Competence	efficient, perfectionistic vs. lax, negligent
Order	organised, methodical, ordered vs. haphazard, disorganized, sloppy
Dutifulness	dutiful, reliable, dependable, rigid vs. casual, undependable
Achievement-Striving	purposeful, ambitious, workaholic vs. aimless
Self-Discipline	industrious, devoted, dogged vs. negligent, hedonistic
Deliberation	*reflective, thorough, ruminative vs. careless, hasty*
Openness to Experience	
Fantasy	imaginative, dreamer, unrealistic vs. practical, concrete
Aesthetic	aesthetic vs. unaesthetic
Feelings	emotionally responsive, sensitive vs. unresponsive, constricted
Actions	*novelty seeking, eccentric vs. routine, habitual stubborn*
Ideas	curious, odd, peculiar, strange vs. pragmatic, rigid
Values	*broad-minded, tolerant vs. traditional, dogmatic, biased*
Agreeableness	
Trust	trusting, gullible vs. sceptical, cynical, suspicious, paranoid
Straightforwardness	honest, confiding vs. cunning, manipulative, deceptive
Altruism	giving, sacrificial vs. selfish, stingy, greedy, exploitative
Compliance	cooperative, docile vs. oppositional, combative, aggressive
Modesty	self-effacing, meek vs. confident, boastful, arrogant
Tender-Mindedness	concerned, compassionate, empathic vs. callous, ruthless

In relation to the current discussion, the FFM also provides a reasonable explanation as to why some individuals may take ecstasy, as well as why some may take part in other risk-taking behaviours. The FFM would likely describe the risk-taker, as per the subject in this research, as high on the extraversion and openness to experience factors, whilst low on the neuroticism and conscientiousness factors. A study by Schmitt (2004) examined how the FFM personality traits related to risky forms of sexual behaviour across the general population in 52 countries. He found that impulsive sensation seeking (combined low scores on the agreeableness and conscientiousness factors), was the strongest personality correlate of risky sexual behaviour. Results also indicated that low scores on either the agreeableness or conscientiousness factor were associated with higher levels of relationship infidelity, and that sexual promiscuity was significantly related to higher levels of extraversion.

In addition, Flory, Lynam, Milich, Leukefeld and Clayton (2002) examined the relationship of the FFM to symptoms of alcohol and cannabis abuse, after controlling for symptoms of antisocial personality disorder and internalizing psychopathology. Results indicated that symptoms of alcohol abuse / dependence could be described by a pattern of high extraversion and low conscientiousness, whereas symptoms of cannabis abuse / dependence were characterised by low extraversion and high openness to experience. For both sets of symptoms, the personality variables accounted for more than 10% of the variance.

In response to the FFM, Eysenck suggested that factors other than his three are either components of extraversion, neuroticism or psychoticism, or combinations of two of them. For example, Eysenck regarded the conscientiousness and

agreeableness factors of the FFM to be components of psychoticism (Zuckerman et al., 1993). In reply, Costa and McCrae (1995) stated the view that agreeableness and conscientiousness are facets of a broader domain of psychoticism suggests they should show similar patterns of correlates. The authors argue their data provides little support for this view, and that the data suggest that agreeableness and conscientiousness appear to have distinct correlates, thus constituting different dimensions of personality.

In comparing the two, Jang (1998) argued that Eysenck's model combines both descriptive and causal aspects of personality in one theory. By doing so, Eysenck's model is supported by more credible evidence than purely descriptive models, such as the FFM. Secondly, Eysenck's model is descriptively comprehensive by proposing a hierarchy of four levels and by making a clear distinction amongst those levels. Despite the FFM also being hierarchical, Jang argued it seems to blend lower-level factors with higher-level superfactors; namely, the dimensions of agreeableness and conscientiousness are traits at the third level that combine as part of the superfactor of psychoticism at the top level of Eysenck's model. Furthermore, the FFM includes intellect, or openness, at the top level, whereas Eysenck draws a clear line between temperament and cognitive ability and treats intelligence differently. Additionally, Eysenck's model is compelling due to its experimental approach to the study of personality, which makes the model more testable. Consequently, this model is likely to generate more specific predictions, as knowledge about the functioning of the specified physiological structures already exists (Jang, 1998).

Gray and the Two Dimensional Model of Personality

Gray's reinforcement sensitivity theory (Gray, 1970) and its later revised version (Gray & McNaughton, 2000) proposes there are individual differences in the sensitivity, or the reactivity, of basic brain behavioural systems that respond to reinforcing stimuli. Based on this theory, Gray postulates there are two independent dimensions of personality and motivation, namely impulsivity and anxiety (or proneness to these), that represent individual differences in the sensitivity of two neurological systems when the individual is responding to environmental cues. The trait of anxiety is based on an avoidance, "behavioural inhibition system" (BIS) and the trait of impulsivity is based on an appetitive, "behavioural approach system" (BAS). As BIS and BAS are theorised to represent different structures in the nervous system, these sensitivities are presumed to be orthogonal; therefore, within a given population, there should be people with all combinations of high and low BIS and BAS sensitivity. In Gray's model, impulsivity is closely related to Eysenck and the FFM's extraversion factor, whereas Gray's anxiety is closely related to Eysenck and the FFM's neuroticism factor (Carver & White, 1994; Acton, 2003).

The BIS / BAS Scales (Carver & White, 1994) were developed as a self-report questionnaire to measure Gray's theory of personality traits. The BIS / BAS Scales focus on items that tap emotional responses to appetitive and aversive stimuli. The scales provide a single score for BIS and three subscale scores for BAS: (1) BAS reward responsiveness, which includes items that measure anticipation and positive response towards reward (2) BAS drive, which includes items that tap persistence in obtaining desired goals and (3) BAS fun seeking, which includes

statements that are indicative of a willingness to seek out and spontaneously approach potentially rewarding experiences (Dawe & Loxton, 2004; Acton, 2003).

Behavioural Inhibition System (BIS)

The major brain structure theorised to underlie the BIS is the septohippocampal system, part of the limbic system, comprising the hippocampus proper, dentate gyrus, entorhinal cortex, subicular area (subiculum) and the posterior cingulate cortex, its monoaminergic afferents from the brainstem, and its neocortical projection in the frontal lobe (Dawe, Gullo & Loxton, 2004; Carver & White, 1994).

Gray (1970; Gray & McNaughton, 2000) has argued that this physiological mechanism controls the experience of anxiety in response to anxiety-relevant cues. The BIS, according to Gray, is sensitive to signals of punishment, non-reward, and novelty, and inhibits behaviour that may lead to negative or painful outcomes. Thus, BIS activation causes inhibition of movement toward goals. Gray also theorises that BIS functioning is responsible for the experience of negative feelings such as fear, anxiety, frustration and sadness in response to these cues. In terms of individual differences in personality, a greater BIS sensitivity should be reflected in greater proneness to anxiety, provided the person is exposed to the proper situational cues. Additionally, individuals with a more reactive BIS are more likely to inhibit approach behaviour that is accompanied by subjective feelings of anxiety / frustration (Dawe, Gullo & Loxton, 2004; Carver & White, 1994). Thus, it could be theorised that a high BIS sensitivity would be related to non-substance use and non risk-taking behaviour, as the outcome of substance use may be viewed as potentially

negative and such individuals would then avoid this behaviour. However, previous research regarding the role of BIS sensitivity in substance use behaviour is unclear. Some studies report a significant negative correlation between substance use problems and BIS sensitivity (e.g., Franken & Muris, 2006; Genovese & Wallace, 2007; Hundt et al., 2008; Kimbrel et al., 2007; Pardo et al., 2007; Simons et al., 2008), some suggest substance use problems are associated with high BIS sensitivity (e.g., Kambouropoulos & Staiger, 2004; Taylor et al., 2006) and others failed to find a significant association (e.g., Jorm et al., 1999; Knyazev, 2004; Loxton & Dawe, 2006, 2007; Loxton et al., 2008; O'Connor et al., 2009). Clearly more research is needed to clarify this relationship, both in community samples and within drug using populations.

Behavioral Activation System (BAS)

The BAS is the physiological mechanism thought to control appetitive motivation. The underlying neural substrate of BAS is proposed to involve dopaminergic systems, in particular the mesolimbic dopaminergic pathways. As stated previously, this is one of the critical (although not only) pathways underlying the positively reinforcing effects of natural reinforcers such as food, sex and drugs of abuse. Further, the dopamine circuits have been found to activate in response to conditioned cues of reward, prior to the consummation of reinforcing substances (Dawe & Loxton, 2004; Dawe, Gullo & Loxton, 2004).

The BAS is thought to be sensitive to signals of reward, non-punishment and escape from punishment. Activity in this system causes the person to begin, or

increase, movement toward goals. Gray (1970; Gray & McNaughton, 2000) also theorises the BAS is responsible for the experience of positive feelings such as hope, elation and happiness. In terms of individual differences in personality, those with a higher BAS sensitivity are more prone to engage in goal-directed efforts and to experience positive affect in situations containing cues of impending reward (Dawe & Loxton, 2004; Carver & White, 1994). Thus, it would be expected that high BAS sensitivity would likely be positively associated with substance use and other risk-taking behaviours. In line with this, previous research has shown that higher BAS sensitivity is associated with ecstasy use (Egan, Kambourpoulos & Staiger, 2010), and that individuals with problematic substance use such as drug addicted inpatients (Franken, Muris & Georgieva, 2006), alcohol misusing high school girls (Loxton & Dawe, 2001) and hazardous drinking men and women (Kambouropoulos & Staiger, 2007) reported hjgher levels of BAS sensitivity when compared to controls (for a more comprehensive review see Bijttebier, Beck, Claes & Vandereycken, 2009).

In summary, Gray (1970; Gray & McNaughton, 2000) proposes there are two general motivational systems that underlie behaviour and affect: the behavioural inhibition system and the behavioural activation system. In relation to the focus of the current study, Johnson, Turner and Iwata (2003) assessed how levels of behavioural inhibition and activation related to lifetime diagnoses of depression, anxiety, drug / alcohol abuse and dependence, attention deficit hyperactivity disorder and conduct disorder in a sample of 1,803 individuals between the ages of 19 and 21. Results implicated the role of BIS as a vulnerability factor for both depression and anxiety, and implicated the role of BAS (Fun Seeking) as a vulnerability factor for both drug abuse and non-comorbid alcohol diagnoses.

In conclusion, the BAS is of particular interest to the current research, given its known association with the dopaminergic systems and its well established reinforcing links with illicit drugs. Gray's (1970) theory could therefore be used to understand the motivational influences behind continued substance use, as well as other risk-taking behaviours. To apply Gray's theory, for example, an individual with a higher BAS and lower BIS sensitivity may be more likely to both use ecstasy and drive under the influence, whereas an individual with high BAS and BIS sensitivities may be more likely to use ecstasy, but may be less likely to drive under the influence.

In comparing Gray's model with Eysenck's, Gray does not concur that extraversion and neuroticism are crucial factors of personality. In Gray's opinion, extraversion and neuroticism are secondary consequences of the interactions between the impulsivity and anxiety systems. Gray's impulsivity (BAS) factor would be consistent with individuals that are high on both neuroticism and extraversion, whilst Gray's anxiety (BIS) factor is consistent with individuals that are high on neuroticism but low on extraversion. In Gray's view, a person whose BIS is more powerful than their BAS becomes introverted, whilst a person whose BAS is relatively more powerful than their BIS becomes extraverted. Thus, from Gray's perspective, the superfactor of extraversion reflects the relative strength of both impulsivity and anxiety, whereas neuroticism reflects their joint strength, in which a rise in the sensitivity of either system provides an increase in the degree of neuroticism. Gray's theory also envisages that extraverts exhibit superior conditioning with a rewarding unconditioned stimulus, as opposed to Eysenck's prediction that introverts exhibit superiority in conditioning (Jang, 1998). In relation

to drug use, Gray's theory could imply that extraverts would become dependent more quickly following substance use.

Cloninger and the Tridimensional Model of Personality

Cloninger's biosocial tridimensional model of personality postulates there are three genetically independent, but functionally interactive, dimensions of personality: harm avoidance (HA), novelty seeking (NS) and reward dependence (RD). Cloninger considered each of these factors to be moderately heritable, normally distributed, developmentally and situationally stable, and associated with specific neural systems that mediate various stimulus-response relationships. Cloninger proposed that individual differences in the expression of these three dimensions are a reflection of genetic sensitivity in neurological systems, as the three factors are postulated to be related to brain systems regulated principally by dopamine, serotonin and noradrenaline (Dawe & Loxton, 2004; Howard, Kivlahan & Walker, 1995). Cloninger (1987) proposed that NS is related to activity in the dopaminergic system, HA is related to activity in the serotonergic system and RD is related to the influence of noradrenaline on the association of conditioned signals of reward or punishment. The Tridimensional Personality Questionnaire (TPQ; Cloninger, Przybeck, & Svrakic, 1991) and the Temperament and Character Inventory (TCI; Cloninger, Svrakic, Przybeck & Wetzel, 1994) are assessments used to measure the three traits (Acton, 2003). In recent revisions to the theory (e.g., Cloninger, Svrakic & Przybeck, 1993), Cloninger proposed a fourth basic dimension labelled persistence (PS; originally subsumed under RD), and added three "character traits" assumed to develop in adulthood (see Cloninger & Svrakic, 1997). However,

this paper will focus on the 3 aforementioned factors of Cloninger's tridimensional model.

Unlike Eysenck and the FFM model, Cloninger's model is not based on factor analysis; rather, his theory ties phenotypical variation in personality (i.e., the observable characteristics of personality) to neurobiological substrates, emphasising the importance of gene-environment interaction (Howard, Kivlahan & Walker, 1995). Conceptually, Cloninger's theory of personality is most similar to Gray's model. Cloninger's HA dimension is nearly equivalent to Gray's BIS, and Cloninger's NS and RD factors are conceptually equivalent to Gray's BAS. Therefore in essence, Cloninger's HA factor is similar to Eysenck and the FFM's neuroticism factor, whilst NS and RD dimensions are similar to the aforementioned extraversion factor (Acton, 2003).

Harm Avoidance (HA)

The higher order trait of harm avoidance regards the "tendency to respond intensely to aversive stimuli and their conditioned signals, thereby facilitating learning to inhibit behaviour in order to avoid punishment, novelty and frustrative omission of expected rewards" (Howard, Kivlahan & Walker, 1995). In other words, harm avoidance concerns sensitivity to, and avoidance of, punishing stimuli. Individual differences in harm avoidance are theorised to reflect variation in a behavioural inhibition brain system that regulates passive avoidance and extinction responses to conditioned signals of punishment, novelty and frustrative non-reward; conceptually, this is the same as Gray's BIS. The harm avoidance dimension is thought to be linked to the serotonergic system (Carver & White, 1994; Dawe &

Loxton, 2004). Harm avoidance consists of four lower order traits: anticipatory worry and pessimism versus uninhibited optimism, fear of uncertainty, shyness with strangers and fatigability and asthenia versus vigour (Cloninger et al., 1994).

Individuals with a high degree of harm avoidance may be described as cautious, careful, tense, apprehensive, nervous, timid, doubtful, discouraged, insecure, passive, fearful, pessimistic, inhibited, shy, easily fatigable and apprehensive worriers. Such people tend to be inhibited and shy in most social situations, have low energy levels, require more reassurance and encouragement and are unusually sensitive to criticism and punishment. In contrast, individuals with a low degree of harm avoidance may be described as bold, confident, daring, courageous, composed, relaxed, optimistic, carefree, uninhibited, outgoing and energetic. Such people tend to be outgoing and confident in most social situations, have high energy levels and impress others as dynamic, lively and vigorous (Carver & White, 1994; Cloninger et al., 1994; Dawe & Loxton, 2004; Howard, Kivlahan & Walker, 1995).

Novelty Seeking (NS)

Cloninger's novelty seeking dimension regards the tendency to engage in exploratory activity and to experience exhilaration / excitement in response to novel stimuli that may be cues of potential reward or relief of punishment. This dimension is associated with the neural system mediating exploratory pursuit responses to novel stimuli, and appetitive approach responses to potential rewards or their conditioned signals (Carver & White, 1994; Dawe & Loxton, 2004; Howard, Kivlahan &

Walker, 1995). Novelty seeking consists of four lower order traits: exploratory excitability versus stoic rigidity, impulsiveness versus reflection, extravagance versus reserve and disorderliness versus regimentation (Cloninger et al., 1994).

Individuals with a high degree of novelty seeking may be described as impulsive, exploratory, curious, enthusiastic, exuberant, easily bored, fickle, excitable, quick-tempered, extravagant and disorderly. Such people are enthusiastic and quick to engage with whatever is new and unfamiliar, leading to an exploration of potential rewards. In contrast, individuals with a low degree of novelty seeking may be described as reflective, rigid, loyal, stoic, indifferent, uninquiring, unenthusiastic, frugal, reserved, tolerant of monotony, systematic, slow tempered, orderly and persistent (Carver & White, 1994; Cloninger et al., 1994; Dawe & Loxton, 2004; Howard, Kivlahan & Walker, 1995).

Reward Dependence (RD)

The dimension of reward dependence reflects differences in resistance to extinction of previously rewarded behaviour, and a tendency towards maintaining behaviour previously associated with reward. Cloninger associated this dimension with the behavioural maintenance neural system that mediates resistance to extinction of conditioned signals of reward or relief of punishment. This dimension is postulated as the basis for individual differences regarding the ability to delay gratification. Although not in its entirety, some qualities of this dimension conceptually represent Gray's BAS (Carver & White, 1994; Howard, Kivlahan & Walker, 1995). Reward dependence consists of three lower order traits:

sentimentality versus tough mindedness, attachment versus detachment and dependence versus independence (Cloninger et al., 1994).

Individuals who have a high degree of reward dependence may be described as tender-hearted, loving, warm, sensitive, dedicated, dependent, sociable, persistent, ambitious and sentimental. Such people seek social contact and are open to communication with others, finding people they like everywhere they go. They are sensitive to social cues, which facilitates warm social interactions and understanding other people's feelings. Individuals with a low degree of reward dependence may be described as practical, detached, tough-minded, cold, socially insensitive and irresolute. Such people are content to be alone, prefer to keep their distance, rarely initiate communication with others and have difficulty finding something in common with other people. Their views are often practical and objective (Carver & White, 1994; Cloninger et al., 1994; Howard, Kivlahan & Walker, 1995).

In summary, Cloninger's tridimensional model postulates there are three main factors of personality: harm avoidance, novelty seeking and reward dependence (Table 2). Cloninger relates these factors to the dopaminergic and serotonergic neural pathways, which are both of interest to the current research given their well established links to natural reinforcers, such as illicit drugs. In a meta-analysis of studies utilising the TPQ in a population of substance users, Howard, Kivlahan and Walker (1995) conclude that some studies indicate the three factors are independently associated with substance use. In particular, individuals with a low degree of HA, a high degree of NS and a low degree of RD had the highest rates of

substance use. However, evidence for the discriminant, convergent, concurrent and predictive validity of NS is much stronger than for HA and RD.

Table 2

Descriptors of High / Low Scorers on Cloninger's Temperament Dimensions (Cloninger & Svrakic, 1997)

	Descriptors of Extreme Variants	
Temperament Dimension	*High*	*Low*
Harm Avoidance	Pessimistic, fearful, shy, fatigable	Optimistic, daring, outgoing, energetic
Novelty Seeking	Exploratory, impulsive, extravagant, irritable	Reserved, rigid, frugal, stoical
Reward Dependence	Sentimental, open, warm, sympathetic	Critical, aloof, detached, independent

Moreover, a large number of studies have concluded that high NS consistently predicts alcohol and other substance abuse and problems (see Sher, Bartholow & Wood, 2000). These authors aimed to predict substance use disorders from the TPQ and EPQ. Results indicted that within each personality system, traits that relate most clearly to disinhibition or behavioural undercontrol (i.e., TPQ-NS and EPQ-Psychoticism) were the most consistent predictors of substance use disorders, as individuals with higher baseline scores on these measures were more likely than their lower scoring peers to receive a substance use disorder diagnosis (Sher, Bartholow & Wood, 2000).

Furthermore, genetic analysis of data from 2,680 adult Australian twin pairs demonstrated significant genetic contributions to variation in scores on the HA, NS and RD scales of the TPQ, accounting for between 54% and 61% of the stable variation in these traits (Heath, Cloninger & Martin, 1994).

Personality Models: Relevance to REU and Risk-Taking

Four diverse theories of personality have been presented (see Table 3). Each of these theories is particularly pertinent to the current discussion of risk-taking behaviours amongst individuals who regularly use ecstasy. All of these theories, despite different theoretical foundations and language, have elements of similarity. In particular, two important aspects of personality are noted in each theory – which will be broadly referred to here as sensation seeking and conscientiousness. The sensation seeking aspect relates to elements of personality that might describe a person as adventurous, carefree, reckless, excitement-seeking, extraverted, social, desiring external stimulation, risk-taking, impulsive, uninhibited, confident, novelty seeking, exploratory and enjoying a variety of experiences. Of the personality theories presented, this overall aspect represents high scorers on Eysenck's extraversion and psychoticism factors, Costa and McCrae's extraversion and openness to experience factors, Gray's BAS and Cloninger's novelty seeking and reward dependence factors.

The second aspect, conscientiousness, relates to elements of personality that might describe a person as self-disciplined, dutiful, cautious, controlled, ruminative, inhibited, reflective and engaging in planned as opposed to spontaneous behaviour. Of the personality theories presented, this overall aspect represents high scorers on Eysenck and Costa and McCrae's neuroticism factor, Costa and McCrae's conscientiousness factor, Gray's BIS and Cloninger's harm avoidance factor.

It is these two elements, sensation seeking and conscientiousness, that are of particular interest to the current research, due to their hypothesised implications in the realm of substance use and abuse, as well as engagement in additional risk-taking behaviours, such as driving under the influence of drugs, taking sexual risks, and the like. Each of these aspects of personality and related research findings will be explored in the next section.

Table 3

Summary of Personality Traits Included in Eysenck, Costa and McCrae, Gray and Cloninger's Models

Trait	**Description**
Eysenck	
Extraversion	Sociable, lively, active, assertive, sensation seeking, carefree, dominant, expressive, ambitious, enthusiastic, spirited
Neuroticism	Anxious, depressed, unhappy, guilty, tense, irrational, fearful, shy, moody, emotional, inferior self-esteem
Psychoticism	Aggressive, egocentric, impersonal, impulsive, antisocial, creative, tough-minded, nonconformists, uncooperative
Costa & McCrae	
Extraversion	Sociable, lively, active, assertive, sensation seeking, carefree, dominant, expressive, ambitious, enthusiastic, spirited
Neuroticism	Anxious, depressed, unhappy, guilty, tense, irrational, fearful, shy, moody, emotional, inferior self-esteem
Conscientiousness	Organised, self-disciplined, thorough, engage in planned, non spontaneous behaviour
Openness to Experience	Open, imaginative, curious, enjoy a variety of experiences
Agreeableness	Compassionate, cooperative, trusting, generous, friendly
Gray	
BIS	Anxious, sensitivity to signals of punishment / non- reward, inhibiting behaviour that may lead to negative outcome
BAS	Hopeful, elated, happy, sensitivity to signals of reward, movement towards goals, approaching rewarding experiences
Cloninger	
Harm Avoidance	Cautious, apprehensive, fatigable, inhibited, sensitive to punishment, tense, insecure, shy, pessimistic
Novelty Seeking	Impulsive, excitable, exploratory, quick tempered, fickle, extravagant, disinhibited, curious easily bored
Reward Dependence	Ambitious, sympathetic, warm, industrious, sentimental, persistent, dependent, dedicated, tender-hearted

Chapter 3: Sensation Seeking / Impulsivity

The concept of sensation seeking is based on the idea that different individuals have different optimal levels of stimulation or arousal. Sensation seeking is that aspect of personality that describes a person as adventurous, risk-taking, impulsive, uninhibited and exploratory. It is represented in research literature by many names, with each term having a slightly different focus. For example, Zuckerman (1979, p.10) described sensation seeking as "the need for varied, novel, and complex sensations and experiences, and the willingness to take physical and social risks for the sake of such experiences." Similarly, Arnett (1994, p. 290) considered sensation seeking as "a predisposition, a potential, which may be expressed in a variety of ways depending on other aspects of the individual's personality and (especially) depending on how the socialization environment guides, shapes, or suppresses that predisposition. Sensation seeking is not only a potential for taking risks, but is more generally a quality of seeking intensity and novelty in sensory experience, which may be expressed in multiple areas of a person's life."

The term impulsivity is often used interchangeably with sensation seeking. The definition of impulsivity, which Evenden (1999, p.348) aptly quotes as covering a wide range of "actions that are poorly conceived, prematurely expressed, unduly risky, or inappropriate to the situation and that often result in undesirable outcomes" is generally accepted. However, research on this broad concept of impulsivity has illustrated that impulsivity is likely multi-factorial. Monterosso and Ainslie (1999) concluded that the construct of impulsivity has been imprecise in the clinical literature, given the numerous scales, sub-scales and behavioural measures that have

been created to measure it. They suggest that given the modest inter-correlations between many of the existing impulsivity measures, there are different underlying conceptions of the construct. Similarly, Evenden (1999) believes impulsivity is the end result of several different, independent factors, which interact to change behaviour. In what he terms "varieties of impulsivity," Evenden (1999) postulates there are several related phenomena, each potentially influenced by different biological mechanisms, which lead to different forms of impulsive behaviour. In a similar vein, Enticott and Ogloff (2006) separate impulsivity into three distinct levels: the individual level (i.e., who is impulsive), the expression level (i.e., the behavioural expression, observation, and quantification of impulsivity), and the causal level (i.e., the processes/ mechanisms causing the behavioural expression of impulsivity).

In the present study, the sensation seeking / impulsivity construct will be regarded in accordance with Dawe and Loxton's (2004) conceptualisation, in that impulsivity is viewed as a continuum of a personality trait, with two independent dimensions: reward sensitivity and rash-spontaneous impulsivity (Table 4). Reward sensitivity refers to individual differences in attending to and approaching appetitive stimuli. The underlying motivational system reflects Gray's BAS dimension, theorised to be associated with activity in the mesolimbic dopamine system. The reward sensitivity component is typically measured using self-report questionnaires, such as the BAS-Drive and BAS-Reward Responsiveness scales, and behavioural measures including the Card Arrangement Reward Responsiveness Objective Test (CARROT, Powell, Al-Adawi, Morgan & Greenwood, 1996).

The rash-spontaneous component of impulsivity is characterised by a generalised sensation seeking / impulsiveness temperament, and refers to the tendency to act spontaneously and with little regard for future consequences. This factor is proposed to reflect individual differences in the functioning of the orbitofrontal cortex and the ventromedial prefrontal cortex, which are areas of the brain involved in impulse control and decision making (Dawe & Loxton, 2004). Rash-spontaneous impulsivity is typically measured by self-report questionnaires such as Eysenck and Eysenck's Impulsivity Scale, Cloninger's Novelty Seeking Scale, Zuckerman's Sensation Seeking Scale and the Barrett Impulsiveness Scale. Behavioural measures of rash impulsivity involve tasks where participants show a tendency to make high risk choices that may result in a potential payoff despite potential losses, such as gambling tasks (Loxton, Wan, Ho, Cheung, Tam, Leung & Stadlin, 2008).

Table 4

Two Independent Factors of Impulsivity (Dawe & Loxton, 2004)

Impulsivity	
Reward Sensitivity / Drive	*Rash-spontaneous*
A purposeful drive to obtain rewarding stimuli	The tendency to act rashly and without consideration of consequences
Measured by:	Measured by:
Gray's BAS-Drive and BAS-Reward Responsiveness scales	Eysenck Impulsiveness Scale
Sensitivity to Reward (SPSRQ)	Cloninger Novelty-Seeking Scale
	Zuckerman's Sensation Seeking Scale
	Barrett Impulsiveness Scale
	Arnett Inventory of Sensation Seeking

Dawe and Loxton's (2004) two factor model of impulsivity has been confirmed by other research (e.g., Egan, 2010; Franken & Muris, 2006). Most recently, Gullo, Ward, Dawe, Powell and Jackson (2011) employed structural

equation modelling to compare the fit of one- and two-factor models of impulsivity to alcohol and drug use data provided by British and Australian young adults. Results supported the two-factor model, with rash impulsiveness being the more robust predictor.

Conceptualising the construct of impulsivity as having two independent dimensions proves powerful in the drug and alcohol field. Historically, drug and alcohol research has focussed on definitions of impulsivity as behaving rash and spontaneously, without forethought of negative consequences. Although true in part, it is also true that the acquisition and use of substances typically requires a significant amount of goal-directed planning. This is evidenced in that regular ecstasy users anticipate the potential negative consequences arising from their use and take steps to eliminate these (Johnston, Barratt, Fry, Kinner, Stoové, Degenhardt, George, Jenkinson, Dunn & Bruno, 2005). Therefore, a motivation to obtain and use rewarding substances, based in a heightened reward sensitivity drive (i.e. Gray's BAS), together with rash-spontaneous impulsivity, enhance the understanding of substance use. Although independent, these two factors may operate alongside one another, which would account for the inability to curb use (mediated by rash-spontaneous impulsivity) once a reward-cued approach response (mediated by reward sensitivity) has been established (Dawe & Loxton, 2004). Dawe and Loxton (2004) further hypothesise that reward sensitivity plays a role in cued-cravings and the motivation to use substances, but that rash-spontaneous impulsiveness influences actual drug-taking behaviour.

Furthermore, these two factors of impulsivity have paralleled developments in neuroscience research, where changes in the incentive value of rewarding substances has been linked to alterations in neural substrates involved in reward seeking, and with a diminished capacity to inhibit behaviour due to chronic drug exposure (Dawe, Gullo & Loxton, 2004). These two components may reflect different underlying neural processes implicated in addictive behaviours, such that individuals prone to abuse drugs may have a more sensitive BAS. As a result, those individuals are more receptive to the reinforcing effects of drugs and other rewarding stimuli. At the neurobiological level, this is reflected in the less efficient inhibitory dopaminergic synapses on striatal neurons believed to exist in persons with high BAS sensitivity (Dawe, Gullo & Loxton, 2004). Rash-spontaneous impulsivity may also be a predictor of addiction proneness. In an interesting study, Evans, Lawrence, Potts, Appel and Lees (2005) investigated risk factors for the development of dopamine dysregulation syndrome (DDS) in patients with Parkinson Disease. Parkinson Disease is a disorder of movement associated with the progressive degeneration of the dopaminergic nigrostriatal pathway. During treatment, some patients' motivation to take dopaminergic drugs becomes enhanced, and they subsequently develop a harmful pattern of compulsive dopaminergic drug use. The sensitization of brain dopamine systems mediating reward by dopaminergic drugs is thought to underlie the development of DDS. Results from this study indicated that novelty seeking personality traits (as measured by Cloninger's TCI), greater past experimental drug use and greater alcohol intake were significant predictors of DDS. In their conclusions, the authors reported a clear relationship between rash-spontaneous impulsivity and addiction proneness. Similarly, Leyton, Boileau, Benkelfat, Diksic, Baker and Dagher (2002) concur in that subjects given a

moderately low oral dose of d-amphetamine (0.3 mg/kg) significantly increased the amount of extracellular dopamine in the human striatum. This is not surprising given the pharmacology of this drug; however, importantly, a relatively high score on Novelty Seeking measures predicted greater amphetamine-induced dopamine release and amphetamine induced drug wanting, despite the dosage levels of these drugs being insufficient to directly affect mood.

In conclusion, in the current thesis, the impulsivity construct will be viewed as having two independent factors: reward sensitivity and rash-spontaneous impulsivity. In relation to the current research, Study 1 will focus only on the rash-spontaneous factor of impulsivity and its links to risk-taking behaviours, whilst Study 2 focuses on both factors.

Rash-Spontaneous Impulsivity and Risk-Taking

The rash-spontaneous factor of impulsivity has been implicated in various risk-taking behaviours such as alcohol and drug use, engaging in risky sex and driving behaviours as well as problem gambling (e.g., Bogg & Roberts, 2004; Loxton, Nguyen, Casey & Dawe, 2008). In a meta-analysis of 194 studies, Bogg and Roberts (2004) analysed the influence of rash-spontaneous impulsivity on health behaviours in terms of the amount of variance explained (see Table 5). Results indicated that rash-spontaneous impulsivity was a very important factor in relation to explaining a good portion of the variance for excessive alcohol use, drug use, risky driving and risky sexual practices.

Table 5

Influence of rash-spontaneous impulsivity on health behaviours in terms of variance explained in a meta-analysis of 194 studies (Bogg & Roberts, 2004)

Health Behaviour	Rash-Spontaneous Impulsivity *r*	N
Excessive alcohol use	.29	32,137
Drug use	.24	36,573
Risky driving	.25	10,171
Risky sex	.15	12,410

Generally speaking, there are an abundance of research studies that indicates the higher a person scores on measures of rash-spontaneous impulsivity, the more likely they are to engage or have engaged in risk-taking behaviours. Table 6 reviews the current literature and details the relationship of rash-spontaneous impulsivity with health-related behaviours, such as substance use and risky sex, as well as other risky behaviours, such as risky driving and partaking in crime, and some key studies are summarised in the following sections. For ease of comparison between studies, Table 6 only includes studies whose statistical methods included correlation and related techniques.

Rash-Spontaneous Impulsivity and Substance Use

In general, research has shown a positive relationship between rash-spontaneous impulsivity and substance use, in that substance users tend to score higher on measures of rash-spontaneous impulsivity than people who do not use illicit substances, and in some studies, high rash-spontaneous impulsivity scores are a predictor of substance use (see Table 6). For example, Schwarz, Burkhart and Green (1978) found a strong, positive relationship between rash-spontaneous

impulsivity and alcohol use, in that alcohol consumption was strongly related to an individual's stimulus-seeking needs. In particular, the disinhibition subscale (of Zuckerman's Sensation Seeking Scale; SSS) was the most powerful predictor of drinking behaviour. In relation to illicit substances, Dughiero, Schifano and Forza (2001) compared ecstasy users to a control group made up of drug-naïve controls, cannabis users, and users of illicit drugs other than ecstasy on Cloninger's TPQ. Results indicated that the group of ecstasy users scored significantly higher on the Novelty Seeking scale than the control group as a whole. The authors concluded that high Novelty Seeking scores are characteristic of people who use ecstasy, and the propensity to look selectively for novelties could possibly act as a pre-disposing factor for ecstasy use itself.

In a similar study, Butler and Montgomery (2004) administered the Impulsiveness, Venturesomeness and Empathy Questionnaire (IVE; Eysenck, Pearson, Easting & Allsopp, 1985) and Cloninger's TPQ to 254 undergraduate university students. The students were grouped according to their past drug use: non-drug users, cannabis only users, polydrug users that had not used ecstasy, low polydrug ecstasy users (used ecstasy less than 20 times), and polydrug high ecstasy users (used ecstasy more than 20 times). Results indicated that all 3 polydrug groups had higher impulsiveness, venturesomeness and novelty seeking scores than the non-drug user group. Furthermore, Satinder and Black (1984) investigated the relationship between cannabis use and rash-spontaneous impulsivity on Zuckerman's SSS. Results indicated that people who used cannabis 3 or more times per week scored higher on all four subscales of the SSS, with the disinhibition subscale the greatest differential factor between cannabis users and non-users.

Recently, Loxton, Wan, Ho, Cheung, Tam, Leung and Stadlin (2008) investigated the relationship between personality, ecstasy and related drug use and high risk drug related behaviour in 360 club drug users and 303 non-drug users in Hong Kong. Club drug users scored significantly higher on the Chinese version of Zuckerman's SSS than non-drug users. Rash-spontaneous impulsivity was also significantly associated with risky drug related behaviour, such as cross border drug use and polydrug use.

Rash-Spontaneous Impulsivity and Sexual Risk Taking

Sexual risk-taking is influenced by multiple and complex interactions among various relationship, situational and dispositional factors, one of which is rash-spontaneous impulsivity. It is important to gain an understanding of the determinants of sexual risk behaviour, as these factors are essential to the effective implementation of HIV/AIDS prevention programs (Kalichman, Heckman & Kelly, 1996).

In general, most research has shown a positive relationship between rash-spontaneous impulsivity and sexual risk-taking, in that people who report sexual risk-taking behaviours tend to score higher on measures of rash-spontaneous impulsivity, and in some studies, high rash-spontaneous impulsivity scores are a predictor of sexual risk-taking behaviour (see Table 6). For example, Bogaert and Fisher (1995) examined the role of rash-spontaneous impulsivity in predicting 215 university men's number of sexual partners. Results indicated that rash-spontaneous

impulsivity was the greatest predictor of the number of sexual partners in lifetime, and the maximum number of sexual partners in one month.

Sexual risk-taking behaviours have also been investigated in drug using populations, who as stated previously, tend to score higher on measures of rash-spontaneous impulsivity. For example, McCoul and Haslam (2001) found that the frequency of drug use (other than alcohol) significantly correlated with the frequency of unprotected sex and the number of sexual partners. Likewise, Schafer, Blanchard and Fals-Stewart (1994) investigated what characteristics might differentiate between respondents who reported using a condom in their most recent sexual episode with a new partner as opposed to those who did not. Data indicated that individuals who used drugs (other than alcohol) and did not use condoms scored significantly higher on measures of rash-spontaneous impulsivity.

Results from the 2005 Party Drugs Initiative (PDI) in Tasmania (Matthews & Bruno, 2006) indicated that 32% of regular ecstasy users (REU) who reported having penetrative sex in the 6 months prior to the interview (97 out of 100 individuals surveyed) never used protection when having penetrative sex with a casual partner. Overall, 68% of the sample reported using protection during sex in general, while 58% reported using protection while under the influence of ecstasy or related party drugs.

Similarly, research by Topp, Hando and Dillon (1999) on the sexual behaviour practices of REU in Sydney indicates about half of the sample engaged in penetrative sex while under the influence of ecstasy. While intoxicated, REU tended

to use protective barriers less often with casual partners. Furthermore, McElrath (2005) examined the relationship between taking ecstasy, sexual behaviour and sexual risk-taking. Results indicated that REU who engaged in sexual behaviours while intoxicated tended to take greater sexual risks, such as having multiple partners or engaging in sex without protective barriers.

Furthermore, Breen, Degenhardt, Kenner, Bruno, Jenkinson, Matthews and Newman (2006) classified REU into groups according to their typical use of alcohol when using ecstasy (no use, consume 1 – 5 standard drinks and consume more than 5 standard drinks, i.e., binge use). Of the 65% of REU who reported drinking alcohol while taking ecstasy, 69% reported to drink more than 5 standard drinks. These binge drinkers were more likely to report having had three or more sexual partners in the past 6 months, and were less likely to report engaging in safe sexual practices with casual partners while under the influence of drugs.

Comparable results have also been found in the homosexual / bisexual population. Dolezal, Meyer-Bahlburg, Remien and Petkova (1997) examined rash-spontaneous impulsivity and substance use during sex as predictors of unprotected insertive and receptive anal and oral sex in 117 gay men. Results indicated that alcohol use, drug use and rash-spontaneous impulsivity were each significantly associated with all 4 sexual risk behaviour variables. In a similar population, Kalichman, Heckman and Kelly (1996) found that drug use before sex, sexual sensation seeking and nonsexual experience seeking significantly correlated with the frequency of unprotected anal intercourse in homosexual and bisexual men. The

direct effect of sexual sensation seeking accounted for 80% of its total association with unprotected anal intercourse.

Rash-Spontaneous Impulsivity and Driving under the Influence

Driving whilst under the influence of alcohol and / or drugs is a complex area. Undoubtedly, there are situational, dispositional and risk-perception factors that contribute to whether or not an individual drives under the influence. With the exception of alcohol, it is important to note that there is a paucity of research with regards to how long one should wait after taking a substance before driving a motor vehicle, in terms of ensuring that driving ability is not impaired. This, in itself, is a complex and grey area. According to Akram and Forsyth (2000), the half life of a drug, its rate of distribution and excretion affect the concentration of the drug which appears in the urine or blood at any given time. Therefore, a positive test does not necessarily mean that the drug is still pharmacologically active or exerting a mind-altering affect; it only indicates that the drug (or its metabolites) are present. Consequently, positive detection of a drug cannot conclusively prove it is causing driving impairment. However, in light of this, guidelines with regards to recommended waiting times before driving a motor vehicle after taking an illicit substance are not known to exist.

Despite the lack of a precise definition of what constitutes 'driving under the influence' in relation to illicit drugs (which, for the purposes of this thesis, consistent with legal definition, will be considered as driving while an illicit substance is present in a person's bloodstream), research indicates that this behaviour does occur.

For example, results from the Australian Institute of Health and Welfare (AIHW, 2008) household survey of 25,000 Australians aged 14 yrs and older indicated that 1 in 8 people (12.1%) admitted to driving a motor vehicle while under the influence of alcohol, while 2.9% reportedly drove a motor vehicle while under the influence of illicit drugs. In an internet survey of 6,801 Australian drivers by Mallick, Johnston, Goren and Kennedy (2007), 12.6% reported driving under the influence of alcohol, while 12.3% reportedly drove under the influence of cannabis and 5.8% drove under the influence of ecstasy in the last 12 months. Of the drivers who drove under the influence of ecstasy, 37.5% drove within 3 hours of consummation.

In general, most research has shown a positive relationship between rash-spontaneous impulsivity and driving risk-taking behaviours, in that people who reportedly engage in driving risk-taking behaviours such as driving under the influence tend to score higher on measures of rash-spontaneous impulsivity, and in some studies, high rash-spontaneous impulsivity scores are a predictor of driving risk-taking behaviour, or predict a future driving under the influence conviction (see Table 6; Arnett, 1990; Jonah, 1997; Perez & Torrubia, 1985). For example, Yu and Williford (1993) developed and administered the Risk Sensation Seeking Scale (RISK) to 878 people across alcoholism treatment centres, drink driver programs, county jails and those on probation. Results indicated that people who scored highly on the RISK were more likely to have engaged in high-risk driving practices, such as not obeying traffic rules and driving under the influence of alcohol.

Driving risk-taking behaviours have also been investigated in drug using populations, who as stated previously, tend to score higher on measures of rash-

spontaneous impulsivity. Results from the Tasmanian 2005 PDI (Matthews & Bruno, 2006) indicated that among REU who had driven a car in the 6 months prior to interview (80 of the 100 interviewed), 58% reportedly drove under the influence of alcohol, and 55% reportedly drove within one hour of taking ecstasy or a related drug (predominantly ecstasy, 91%). Of those that drove under the influence of ecstasy or a related drug, the average number of times in the preceding six months was 3.5 (range 1-24). Additionally, in an Australian national sample of REU, Matthews, Bruno, Johnston, Black, Degenhardt and Dunn (2009) found that 53% of REU had driven under the influence of ecstasy in the preceding 6 months.

Similarly, other research on drug driving indicates a number of concerns. A survey by Akram (1997) found that 62% of ecstasy and related drug users had driven a motor vehicle whilst under the influence of such drugs. Furthermore, Degenhardt, Dillon, Duff and Ross (2004) found that 43% of a sample of nightclub attendees in Melbourne reported they drove under the influence of ecstasy at some time, whilst 60% reported they had been a passenger in a car where the driver was under the influence of ecstasy. In a sample of Tasmanian injecting drug users, Bruno (2006) found that 63% reported driving within one hour of taking non-prescribed drugs, predominately methamphetamine (74%) and cannabis (62%). Additionally, Darke, Kelly and Ross (2004) found that 83% of a sample of injecting drug users in Sydney reported having driven shortly after consuming drugs, with the common drugs being alcohol, amphetamines, cannabis, heroin and cocaine. Of these, 59% reported having been involved in a motor vehicle accident, with 32% of these accidents occurring while drug driving. Among these, 15% of drivers reported they were

injured during their drug driving accident, while 8% reported they had injured someone else while drug driving.

Research evidence indicates that drugs are often detected in accident involved drivers (Darke, Kelly & Ross, 2004; Kelly, Darke & Ross, 2004). However, as stated previously, the detection of drugs does not provide conclusive evidence that drugs played a causal role in the accident. However, there is overwhelming evidence that alcohol produces significant impairment in driving performance, and that the risk of having an accident increases as the driver's BAC increases (see Kelly, Darke & Ross (2004) for a review). In relation to illicit drugs, however, the evidence is not as clear. For example, whilst evidence from laboratory studies clearly indicates that cannabis produces significant impairment in driving performance in a dose-related pattern, the same level of impairment is not replicated in cannabis driving simulator studies. In relation to stimulants such as ecstasy and cocaine, research has found inconsistent results, with some studies finding evidence of decreased performance, some increased performance and some no effect (Headen, 1994; Kelly, Darke & Ross, 2004). In addition to driving under the influence of a single drug, significant impairment in driving performance has also been found in relation to polydrug use, particularly when alcohol is one of the drugs involved (Kelly, Darke & Ross, 2004).

Research also indicates there are other factors involved in drug driving, namely age and sex. Studies have concluded that younger drivers (aged 35 and below) are at increased driving risk due to factors such as limited driving experience and a greater propensity to engage in risk-taking behaviours. In relation to sex, the

majority of studies indicate that males are more likely to report drug driving, although some studies indicate that female drug driving is on the increase (Kelly, Darke & Ross, 2004).

In summary, driving under the influence of alcohol and illicit drugs represents a public health safety issue. Whilst the detrimental effects of alcohol on driving performance is well documented, there has been inconclusive evidence regarding the effects of illicit substances on driving performance. Therefore, further research on the effects illicit drugs have on driving performance is needed in order to facilitate recommended guidelines in an aim to educate illicit drug users, with a goal of ultimately minimising the risks to themselves and others whilst driving.

In relation to the current thesis, personality correlates of REU who drug drive is of interest for the many reasons outlined above. Of particular interest is the relationship between rash-spontaneous impulsivity and the choice to drug drive; as persons who tend to act rashly without consideration of potential consequences may be more likely to engage in this risky behaviour.

Table 6

Details of Impulsivity Related Studies by Health-Related Outcome

Author(s)	Year	Subjects	Impulsivity Measure	Behavioural Domain	Analytical Method	Result
			Substance Use			
Arnett	1994	177 adolescents and adults	AISS	Illicit Drug Use (other than cannabis)	Correlation	0.23*
Greene et al	2000	724 male and female 11 – 25 year olds	SSS: DIS	Illicit drug use in past 90 days	Correlation	0.49**
Kohn & Coulas	1985	78 university students	SSS Total SSS DIS	Use of cannabis	Correlation	0.19* 0.37**
Ripa et al	2001	691 males / females	SSS (Danish)	Use cannabis Use other illicit drugs	Correlation	0.32*** 0.20***
Vanzile et al	2006	1014 women	ZKPQ	Illicit drug use	Confirmatory factor analysis	0.37
			Sexual Risk			
Arnett	1994	116 male and female adolescents	AISS SSS AISS SSS	Sex without contraception Sex with someone not known well	Correlation	0.02 - 0.11 0.28* 0.01
Arnett	1994	177 male and female adolescents and adults	AISS	Sex without contraception Sex with someone not known well	Correlation	0.14 0.30**

Author(s)	Year	Subjects	Impulsivity Measure	Behavioural Domain	Analytical Method	Result
Cooper et al	2000	1,666 male and female young adults	EIS	Condom use Risky sex (e.g., one-night stands, prostitution)	Path analysis (total effect)	-0.105* 0.003
Greene et al	2000	724 male and female 11 – 25 year olds	SSS: DIS	Risky sex (number of sexual partners and use of protective measures)	Correlation	0.25**
Justus et al	2000	410 young adults	SSS: DIS & BS	Risky sex (one night stands or sex with a stranger)	SEM	0.50**
Kalichman et al	1996	99 homosexual and bisexually active men	Drug use before sex Sexual SSS NESS	Unprotected anal intercourse	Correlation	0.26** 0.27** 0.28**
Kalichman & Rompa	1995	296 homosexual men	Sexual SSS NESS	Insertive anal intercourse without condom Receptive anal intercourse without condom Insertive anal intercourse without condom Receptive anal intercourse without condom	Correlation	0.25** 0.25** 0.21** 0.22*
		158 heterosexual men and women	Sexual SSS NESS	Vaginal intercourse without condom Vaginal intercourse without condom		0.38** 0.29**
McCoul & Haslam	2001	112 heterosexual men	EIS Sexual SSS	Frequency of unprotected sex Number of partners	Correlation	0.27** 0.17 0.21* 0.45***

Author(s)	Year	Subjects	Impulsivity Measure	Behavioural Domain	Analytical Method	Result
McCoul & Haslam	2001	104 homosexual men	EIS Sexual SSS	Frequency of unprotected sex Number of partners	Correlation	-0.13 0.12 0.03 0.03
Ripa et al	2001	691 males and females	SSS (Danish translation)	Risky sexual behaviour Extramarital intercourse Sexually transmitted diseases	Correlation	0.18*** 0.30*** 0.20***
Vanzile et al	2006	1014 women	ZKPQ	Risky sexual behaviour	Confirmatory factor analysis	0.22
			Driving Risk – Alcohol			
Arnett et al	1997	139 male and female adolescents	AISS	DUI alcohol	Correlation	0.23*
Arnett	1994	116 male and female adolescents	AISS SSS	DUI alcohol	Correlation	0.39** 0.24*
Arnett	1994	177 male and female adolescents (139) and adults (38)	AISS	DUI alcohol	Correlation	0.24*
Greene et al	2000	724 male and female 11 – 25 year old	SSS: DIS	DUI alcohol in the past year, or rode in car with drunk driver in past year	Correlation	0.48**
Little & Robinson	1989	115 convicted DWIs in prison	10 item SSS	DWI recidivism	Correlation	0.15
Ripa et al.	2001	691 males and females	SSS (Danish translation)	DUI alcohol	Correlation	0.19***
Stacy et al.	1991	614 men and women	SSS	DUI alcohol	SEM	0.25*** (males only)

Author(s)	Year	Subjects	Impulsivity Measure	Behavioural Domain	Analytical Method	Result
			Driving Risk – Drugs			
Ames et al	2002	166 drug offenders in drug diversion program	SS and Impulsivity Scale of ZKPQ	DUI cannabis	SEM	0.31*
			Other Risk-Taking Behaviours			
Arnett	1994	116 male and female adolescents	AISS SSS	Vandalism Theft worth < $50 Theft worth > $50	Correlation	0.38** 0.51** 0.31** 0.05 0.09 0.01
Arnett	1994	177 male and female adolescents (139) and adults (38)	AISS	Vandalism Shoplifting Theft worth > $50	Correlation	0.33** 0.19 0.05
Horvath & Zuckerman	1993	447 university students	SSS	Crime risk (arrest for selling / buying drugs, shoplifting, DUI alcohol, perjury, forging cheques, vandalism)	Multiple regression SEM	0.27 0.53***

Note. AISS = Arnett Inventory of Sensation Seeking; DUI = Driving under the influence; DWI = Driving while intoxicated; EIS = Eysenck Impulsivity Scale; NESS = Nonsexual Experience Seeking Scale; SEM = Structural Equation Modelling; SSS = Sensation Seeking Scale, of which there are four subscales: Thrill and Adventure Seeking (TAS), Disinhibition (Dis), Experience Seeking (ES) and Boredom Susceptibility (BS); ZKPQ = Zuckerman – Kuhlman Personality Questionnaire

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Chapter 4: Conscientiousness

The second factor of interest in the current research is the personality variable of conscientiousness. Conscientiousness refers to individual differences in the tendency to follow socially prescribed norms for impulse control, to be task oriented, to be goal (achievement) directed, to be well planned, to delay gratification and to generally follow norms and rules (Bogg & Roberts, 2004). Conscientiousness is one of the five domains in Costa and McCrae's Five Factor Model, as discussed previously, and is represented in various factors of other previously presented personality models.

Factor analysis research has indicated the broad characteristic of conscientiousness may be broken down into the 6 lower order facets of industriousness, order, responsibility, self-control, traditionalism and virtue (see Table 7). These lower order facets of conscientiousness are important, as they are believed to measure different aspects of conscientiousness, and therefore may provide better predictions of behavioural outcomes than the overall composite measure (Roberts, Bogg, Walton, Chernyshenko & Stark, 2004). This model of conscientiousness has been confirmed by other research (e.g., Roberts, Chernyshenko, Stark & Goldberg, 2005; Costa & McCrae, 1998).

Table 7

Facets of Conscientiousness (Bogg & Roberts, 2004)

Conscientiousness Facet	*Description of High Scorers*
Industriousness	High levels of achievement and persistence, hard working, ambitious, confident, resourceful
Order	Well organised, efficient, regimented, good ability to plan
Responsibility	Reliable, dependable, like to be of service to others, frequently contribute time and money to community projects, cooperative
Self-control	Tendency to inhibit impulsive thoughts, feelings and behaviours, cautious, level-headed, able to delay gratification
Traditionalism	High levels of conventionality and norm adherence, dislike change, do not challenge authority
Virtue	Adherence to a strong moral grounding, act in accordance with accepted rules of good moral behaviour

Several assessments have been developed to measure the overall construct of conscientiousness. However, as Roberts, Chernyshenko, Stark and Goldberg (2005) point out, no one personality measure actually measures all six lower order facets. Therefore, multiple scales must be employed if all six facets are to be measured. Table 8 below details the major personality measures in terms of the lower order facets they assess.

Table 8

Major Personality Measures Coded for the Six Lower Order Conscientiousness Facets (Bogg & Roberts, 2004)

Facet of Conscientiousness	*Assessed by:*
Industriousness	CPI: Achievement via Conformance MPQ: Achievement
Order	16PF: Control, Self-Disciplined HPI: Prudence: Mastery NEO-FFI, NEO-PI, NEO-PI-R: Conscientiousness TPQ: Disorderly/regimented, order
Responsibility	CPI: Conformity, Responsibility, Socialization EPQ: Psychoticism HPI: Prudence JPI: Responsbility
Self-Control	BIS CPI: Impulsivity EIS HPI: Prudence SSS: Disinhibition TPQ: Novelty Seeking
Traditionalism	16PF: Conforming JPI: Conformity MPQ: Traditionalism
Virtue	CPI: Self-control HPI: Prudence

Note. 16PF = 16 Personality Factor Questionnaire*;* BIS = Barrett Impulsivity Scale*;* CPI = California Psychological Inventory; EIS = Eysenck Impulsiveness Scale*;* EPQ = Eysenck Personality Questionnaire*;* HPI = Hogan Personality Inventory; JPI: Jackson Personality Inventory; MPQ = Multidimensional Personality Questionnaire*;* NEO-FFI = NEO-Five-Factor Inventory*;* NEO-PI = NEO-Personality Inventory*;* NEO-PI-R = NEO-Personality Inventory-Revised; SSS = Sensation Seeking Scale; TPQ = Tridimensional Personality Questionnaire

According to a meta-analysis of 194 studies by Bogg and Roberts (2004), the responsibility facet appears to be most closely linked to risk-taking behaviours. Research on the responsibility facet of conscientiousness reveals that low levels of responsibility have been associated with relationship infidelity and sexual promiscuity (Schmitt, 2004), along with substance use / abuse and antisocial behaviour (Lynam, Leukefeld & Clayton, 2003). In addition, the responsibility facet of conscientiousness has been shown to be a negative predictor of drug use and

traffic risk (Roberts et al., 2005). In their meta-analysis, Bogg and Roberts (2004) examined the relationship between the responsibility facet of conscientiousness and health-related behaviours (Table 9). Results indicated that responsibility played a large part in the variance of determining health-related behaviours; these behaviours are described in more detail in the following sections.

Table 9

Influence of conscientiousness on risky health behaviours

Health Behaviour	**Conscientiousness (Responsibility)** ***r***	**N**
Excessive alcohol use	-.18	32,137
Drug use	-.32	36,573
Risky driving	-.16	10,171
Risky sex	-.12	12,410

Conscientiousness and Substance Use

In general, research has shown a negative relationship between conscientiousness and substance use, in that substance users tend to score lower on measures of conscientiousness than people who do not use illicit substances (see Table 10). For example, research has indicated lower scores on conscientiousness measures is significantly associated with cannabis use, stimulant use and the use of hallucinogens and opiates (e.g., Block, Block & Keyes, 1988; Hindelang, 1972). Furthermore, results of some studies indicate that low scores on conscientiousness measures have predicted alcohol and substance use disorders, and have distinguished between groups of users and non-users (see Table 10; e.g., Flory, Lynam, Milich, Leukefeld & Clayton, 2002; McGue, Slutske & Iacono, 1999).

Conscientiousness and Sexual Risk-Taking

In general, research has shown a negative relationship between conscientiousness and sexual risk-taking, in that people who reportedly engage in sexual risk-taking behaviours tend to score lower on measures of conscientiousness than people who do not engage in risky sexual behaviours (see Table 10). For example, research has indicated that conscientiousness is significantly negatively associated with engaging in promiscuous sexual activity, having sex with a stranger and having unprotected sex with a new sexual partner (e.g., Hindeland, 1972; Vollrath, Knoch & Cassano, 1999).

Conscientiousness and Driving under the Influence

Generally speaking, research has shown a negative relationship between conscientiousness and driving under the influence of alcohol. For example, research has shown that individuals who reportedly drink drive tend to score lower on measures of conscientiousness than people who do not drink drive (see Table 10; Hindelang, 1972; Vollrath, Knoch & Cassano, 1999). No research was found in relation to the direct relationship between conscientiousness and driving under the influence of illicit drugs. However, the Bogg and Roberts (2004) meta-analysis (see Table 9) revealed inverse relationships between conscientiousness, drug use, and risky driving; therefore, it could be inferred from this meta-analysis that conscientiousness is likely to also be related to driving under the influence of illicit drugs in a negative fashion.

Table 10

Details of Conscientiousness Related Studies by Health-Related Outcome

Author(s)	Year	Subjects	Conscientiousness Measure	Behavioural Domain	Analytical Method	Result
			Alcohol and Substance Use			
Block et al	1988	54 adolescent girls	CAQ: Is fastidious	Cannabis Use	Correlation	-0.44**
				Stimulant / Opiate Use		-0.58***
			CAQ: Favours conservative values	Cannabis Use		-0.62***
				Stimulant / Opiate Use		-0.66***
			CAQ: Behaves sympathetic manner	Stimulant / Opiate Use		-0.27*
			CAQ: Judges self and others in conventional terms	Cannabis Use		-0.30*
				Stimulant / Opiate Use		-0.40**
			CAQ: High aspiration level for self	Cannabis Use		-0.31*
				Stimulant / Opiate Use		-0.30*
Block et al	1988	51 adolescent boys	CAQ: Is dependable	Cannabis Use	Correlation	-0.25
				Stimulant / Opiate Use		-0.42**
			CAQ: Favours conservative values	Cannabis Use		-0.54***
				Stimulant / Opiate Use		-0.54***
			CAQ: Behaves sympathetic manner	Stimulant / Opiate Use		-0.35*
			CAQ: Is moralistic	Cannabis Use		-0.46***
				Stimulant / Opiate Use		-0.41**
			CAQ: Judges self and others in conventional terms	Cannabis Use		0.20
				Stimulant / Opiate Use		-0.31*
			CAQ: High aspiration level for self	Cannabis Use		-0.38**
				Stimulant / Opiate Use		-0.39**

Author(s)	Year	Subjects	Conscientiousness Measure	Behavioural Domain	Analytical Method	Result
Cook et al	1998	891 men and women	CPI: Responsibility CPI: Socialization CPI: Self-control	Units of alcohol consumed	Correlation	0.06 -0.12** -0.11**
Flory et al	2002	481 men and women	NEO-PI-R: Conscientiousness	DSM Diagnosis of alcohol dependence Cannabis abuse / dependence Alcohol dependence Cannabis dependence	Correlation Hierarchical Regression Analysis	-0.26** -0.23** -0.23** 0.12*
Hindelang	1972	337 adolescents	CPI: Responsibility	Using cannabis Sniffing glue Using LSD, methedrine / mescaline Using heroin	Correlation	-0.36** -0.16** -0.23** -0.13*
Pfefferbaum & Woods	1994	296 university students	CPI: Self-control CPI: Socialization	Use of tobacco, alcohol, cannabis and/or harder drugs in the last 4 wks	Correlation	-0.32** -0.44**
Roberts & Bogg	2004	99 women	CPI Combined score on Responsibility, Self-control, Socialization, & Achievement via Conformance subscales at age 21 and 43	Prediction of alcohol use at age 43 Prediction of cannabis use at age 43	Path coefficient	0.26* -0.28*
Roberts et al	2005	197 men and women	Combined responsibility measures	Drug use	Correlation	-.24*
Shoal & Giancola	2003	311 adolescent boys	MPQ: Constraint	Frequency of substance use Substance use problems	Correlation	-0.33** -0.23**

Author(s)	Year	Subjects	Conscientiousness Measure	Behavioural Domain	Analytical Method	Result
			Sexual Risk			
Hindelang	1972	337 adolescents	CPI: Responsibility	Engaging in promiscuous sexual activity	Correlation	-0.14**
Vollrath et al	1999	683 male and female university students	NEO-FFI: Conscientiousness	Risky sexual behaviour (having sex with person one just met for the first time; having unprotected sex with new sexual partner)	Correlation	-.12**
			Driving Risk – Alcohol & Drugs			
Hindelang	1972	337 adolescents	CPI: Responsibility	DUI alcohol or drugs	Correlation	-0.18**
Vollrath et al	1999	683 male and female university students	NEO-FFI: Conscientiousness	Drunk Driving	Correlation	-.05
			Crime Risk			
Hindelang	1972	337 adolescents	CPI: Responsibility	Theft greater than $10 Property destruction causing more than $10 damage	Correlation	-0.27** -0.32**

Author(s)	Year	Subjects	Conscientiousness Measure	Behavioural Domain	Analytical Method	Result
Pfefferbaum & Woods	1994	296 university students	CPI: Self-control CPI: Socialization	Theft, shoplifting, stealing car or something out of a car, vandalism, setting fire to property, damaging property	Correlation	-0.33*** -0.25**

Note. CAQ = California Q-set; CPI = California Psychological Inventory; MPQ = Multidimensional Personality Questionnaire; NEO-FFI = NEO-Five-Factor Inventory; NEO-PI-R = NEO-Personality Inventory – Revised
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Chapter 5: Rash-Spontaneous Impulsivity and Conscientiousness – One Trait or Two?

All personality traits may be viewed on a continuum, in that the behavioural, outward expression of particular traits may be classified as 'high,' 'moderate' or 'low.' The personality traits at the focus of the current research, rash-spontaneous impulsivity and conscientiousness, could, and have been, viewed as opposite ends of the continuum of a single trait. This is particularly evident in research involving conscientiousness, in that it is often measured by impulsivity related scales; for example, in Bogg and Robert's (1994) meta-analysis, numerous studies conceptualised conscientiousness as negative scores on various sensation seeking and impulsivity scales. Furthermore, self-control, or the lack thereof, which is a manifestation of impulsiveness, has been identified as a lower order facet of conscientiousness.

Therefore, it is evident that these two aspects of personality are certainly related, and by definition, people high in conscientiousness are likely to be low in rash-spontaneous impulsivity in any given particular area. However, these may not be perfect reflections of each other, and as such, the current research chooses to view these two personality factors as constructs in separate domains, given that the construct of impulsivity appears to have strong brain and neurological links underpinning its outward expression.

Chapter 6: The Role of Demographic Factors on Risk-Taking Behaviours

In addition to personality factors and attitudes, there are other factors that are known to be related to risk-taking behaviour. Research has shown that scores on measures of rash-spontaneous impulsivity decline steadily with age from approximately 16 onwards (Zuckerman, Eysenck & Eysenck, 1978), whilst scores on measures of conscientiousness related traits tend to increase with age (Bogg & Roberts, 2004). Therefore, one would expect that adolescents and young adults would be more likely than older people to engage in risky behaviour. Additionally, research has indicated that in general, males tend to engage in more risk-taking behaviours than their female counterparts (e.g., Arnett, 1990; Zuckerman, Eysenck & Eysenck, 1978). Therefore, one would expect that more males than females will be represented in terms of engaging in high risk behaviours. In general, there are have been numerous studies (e.g., Arnett, 1994; Kelly, Darke & Ross, 2004; Nordfjærn, Jørgensen & Rundmo, 2010) that have shown younger males tend to engage in risk-taking behaviours more frequently.

Chapter 7: Study 1 Research Aims and Hypotheses

In summary, previous research on personality has shown that high levels of rash-spontaneous impulsivity is associated with engagement in various health-related risk-taking behaviours, whilst high levels of conscientiousness appears to be a protective factor in relation to engagement in health-related risky behaviours.

Study 1 was an initial exploratory study that aimed to investigate the extent to which the personality traits of rash-spontaneous impulsivity and conscientiousness (responsibility facet) contribute to risk-taking behaviours in a sample of regular ecstasy users. This study followed on from a study conducted by Dr. Allison Matthews in her work with the Tasmanian Party Drugs Initiative (PDI) in 2005, and utilised data collected as part of the 2006 Hobart PDI (now known as the Ecstasy and Related Drugs Reporting System, EDRS). This study further investigated key results from the 2005 PDI study, namely the prevalence of sexual risk-taking and drug driving, and its association with the personality factors of impulsivity and conscientiousness. This research aimed to examine if one or both of these personality factors were able to differentiate and potentially predict between those REU who engaged in risk-taking behaviours versus those REU who did not, with a view to better targeting harm reduction information.

In light of past research, the rash-spontaneous factor of impulsivity was expected to positively correlate with risk-taking behaviours. It was further expected that this factor would be predictive of REU who engaged in risk-taking behaviours in contrast to their non risk-taking REU counterparts in a positive fashion. In relation

to conscientiousness, the responsibility facet was expected to negatively correlate with risk-taking behaviours. It was further expected that this factor would be predictive of REU who engaged in risk-taking behaviours in contrast to their non risk-taking REU counterparts in a negative fashion. It was also expected that more males than females would engage in risk-taking behaviours, and that younger REU would engage in more risk-taking behaviours than older REU.

Chapter 8: Study 1 Method

Party Drugs Initiative (PDI)

The PDI was a companion project to the Illicit Drug Reporting System (IDRS), which has been conducted annually in every state and territory of Australia since 1999. The PDI aimed to study trends in the use, price, purity and availability of ecstasy (methylenedioxymethamphetamine or MDMA) and related drugs (ERD), including methamphetamine, cocaine, lysergic acid diethylamide (LSD), ketamine, methylelenedioxyamphetamine (MDA) and gamma hydroxybutyrate (GHB). In addition, the PDI examined the nature and incidence of risk behaviours, health related harms associated with ecstasy and related drug (ERD) use and where possible identified issues relevant to the development of harm reduction strategies. The PDI was funded nationally by the Australian Government Department of Health and Ageing (Matthews & Bruno, 2006).

Participants

Participants included 200 regular ecstasy users (REU) who participated in the 2005 and 2006 PDI data collection in Hobart, Tasmania. Inclusion criteria for the PDI study included at minimum monthly use of ecstasy in the preceding 6 months before interview, and having resided in the greater Hobart area for the preceding 12 months before interview. Demographic characteristics of the sample are reported in Table 11.

Table 11

Demographic characteristics of participants

N = 200	%
Mean age	24.3 (*SD* = 4.99)
Male	56.5
Employed full time	37.0
Full-time student	31.5
Employed part-time / casual	20.0
Unemployed	9.5
Marital status: single	51.5
Marital status: regular partner	38.5
Marital status: married / de facto	9.5
Live in rented house / flat	72.0
Live with parents or in family home	23.0
Completed Year 12	83.5
Completed post Year 12 courses (trade/technical/university)	49.0
Heterosexual	92.0
Bi-sexual	5.5

Ecstasy was the main drug of choice for 55.5% of the sample, followed by 13.0% preferring alcohol, 10.0% preferring cannabis and 8.5% preferring cocaine. The majority of the sample had never injected any drug (81.5%). Tables 12 and 13 detail the sample's ecstasy use history and patterns of other drug use, respectively.

Table 12

Participants' ecstasy use history

Mean age of first use	19.8 (*SD* = 4.12)
Mean number of ecstasy tablets usually taken	2.1 (*SD* = 1.04)
Main route of administration:	
Swallowing	93.5%
Snorting	3.5%
Injecting	1.0%
Mean number of days used ecstasy in the last 6 months	17.8 (*SD* = 12.71)

Table 13

Participants' patterns of lifetime and recent use of other drugs

Drug	% Ever Used	% Used Last 6 Months	Mean No. Days Used Last 6 Months
Methamphetamine powder	86.0	69.5	7.32 (*SD* = 11.74)
Methamphetamine base	42.0	31.5	14.71 (*SD* = 29.60)
Crystal methamphetamine	35.5	18.5	9.84 (*SD* = 13.19)
Pharmaceutical stimulants	47.0	14.0	8.43 (*SD* = 14.06)
Cocaine	49.0	26.5	2.32 (*SD* = 1.52)
LSD (lysergic acid diethylamide)	53.0	30.0	3.68 (*SD* = 3.91)
MDA (methylelenedioxyamphetamine)	11.0	3.0	1.33 (*SD* = 0.52)
Ketamine	23.5	8.5	2.41 (*SD* = 1.37)
GHB (gamma hydroxybutyrate)	8.0	2.5	4.20 (*SD* = 5.50)
Amyl Nitrate	45.0	13.0	4.58 (*SD* = 4.37)
Nitrous Oxide	69.0	40.0	6.91 (*SD* = 7.91)
Cannabis	100.0	85.5	64.20 (*SD* = 70.94)
Alcohol	100.0	96.5	66.03 (*SD* = 46.28)
Heroin	9.0	1.0	6.50 (*SD* = 4.95)
Methadone	7.0	3.0	67.83 (*SD* = 87.38)
Buprenorphine	2.5	1.5	62.33 (*SD* = 101.93)
Other Opiates	25.0	11.5	17.65 (*SD* = 29.78)
Benzodiazepines	44.0	29.0	11.79 (*SD* = 26.67)
Mushrooms	68.5	47.5	3.89 (*SD* = 3.28)
Anti-depressants	20.5	10.5	93.24 (*SD* = 86.88)
Tobacco	91.5	82.0	134.46 (*SD* = 67.31)

Procedure

Participants were recruited through posters and flyers distributed in the greater Hobart area (cafes, bars, nightclubs, clothing and music stores, university, youth services and hairdressers), internet forums (www.pillreports.com, www.freshdisko.com, and www.digitalthugz.com) and snowballing (Matthews & Bruno, 2006). Snowball sampling (Goodman, 1961) is a method that aims to recruit new respondents through introductions from initial contact persons. Snowball sampling methods are especially useful when researching hidden populations in which there are no useable sampling frames, such as in drug using populations that remain outside of treatment systems (Eland-Goossensen, van de Goor, Vollemans, Hendriks & Garretsen, 1997).

Interested participants contacted the researchers through voicemail, email or SMS to leave their contact details. Participants were then contacted by one of the PDI interviewers and asked a series of questions to determine if the participant met eligibility criteria. Eligible participants were then provided with verbal information about the study, the interview content and process and the confidentiality and anonymity of the information that they may provide. Once the participant gave their informal consent to participate, arrangements were made to meet with the PDI interviewer at an agreed time and location.

Prior to commencing the PDI interview, participants were given further detailed information about the PDI through a written information sheet. Participants were informed that the information they gave was strictly confidential, that they could not be personally identified in any way and that they were free to fully

withdraw at any time or decline to answer any questions. Participants then signed a consent form to indicate they had read and understood the information given to them, and that their questions had been answered to their satisfaction. Interviews took approximately 45 to 60 minutes and participants were reimbursed $30 for their time and expenses (Matthews & Bruno, 2006).

Interviewers for the PDI included the Author in addition to research staff within the School of Psychology at the University of Tasmania. Each interviewer was trained in the administration of PDI interviews and followed a standardised manual for interviews, provided by the National Drug and Alcohol Research Centre.

Materials

PDI Questionnaire

The PDI questionnaire was a structured interview that assessed demographic information, patterns of ERD use (including frequency, quantity, and routes of administration), the price, purity and availability of ERD, perceived benefits and risks associated with ERD use, symptoms of dependence, risk-taking behaviours (including injecting drug use, overdose, driving and safe sex), other problems associated with ERD use (e.g., work / study, financial, social and legal problems), self-reported criminal activity and general trends in party drug markets (Matthews & Bruno, 2006). A copy of the PDI questionnaire is included in Appendix A.

Arnett Inventory of Sensation Seeking (AISS)

The Arnett Inventory of Sensation Seeking (AISS) (Arnett, 1994) was included as part of the PDI questionnaire in 2005 and 2006, which participants were encouraged to self-complete. The AISS is a self-report measure that emphasises novelty (the quest for new, different and spontaneous experiences) and intensity (the desire for intense sensory experiences) as the two main components of sensation seeking. Novelty and intensity partially align with Dawe and Loxton's (2004) conceptualisation of rash-spontaneous impulsivity; however, despite not being a perfect match, due to the similarity between definitions of sensation seeking and impulsivity, parallels may be drawn.

The AISS consists of 20 statements, which participants rate as to how well the statement describes them on a scale ranging from '*describes me very well'* to '*does not describe me at all.'* Statements on the AISS include '*When taking a trip, I think it is best to make as few plans as possible and just take it as it comes; I would never like to gamble with money, even if I could afford it;* and, '*I like the feeling of standing next to the edge of a high place and looking down.'* Statements on the AISS purposefully do not include risky or illegal behaviours; rather, the statements depict a wide range of behaviours in which the participant's desire for novelty and intensity of sensory experience may be expressed.

The AISS is scored on a 4-point scale, with some statements scored in reverse. A total score, as well as an intensity and novelty subscale score, is obtained by appropriate summation of individual questions. Higher AISS scores are

indicative of higher degrees of sensation seeking, on a continuum rather than categorical nature.

The AISS has been validated in adolescent and adult populations. The novelty and intensity scales correlate at 0.41, with an internal reliability (Cronbach alpha) of 0.70 for the entire scale. Males have been found to consistently score higher on the AISS than females, and adolescents have been found to score consistently higher than adults (Arnett, 1994).

International Personality Item Pool Responsibility Scale (IPIP: Re)

The International Personality Item Pool (IPIP) (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger & Gough, 2006) is a web-based, scientific collaboratory that provides access to measures of personality and individual differences in the public domain. The IPIP website and scales are developed conjointly amongst scientists worldwide. Included in only one year of data collection, the PDI (2006), was the IPIP scale of responsibility, which is based on the responsibility subscale of the California Psychological Inventory (CPI) (Gough & Bradley, 1996). The domain of responsibility, as discussed in previous sections, is a facet of the trait of conscientiousness. Participants were again encouraged to self-complete this assessment.

The CPI, on which the IPIP: Re scale is based, is a self-report inventory concerned with normal aspects of personality, in that it was designed to evaluate interpersonal behaviour and social interaction within normal individuals. The IPIP:

Re scale consists of 10 statements that describe people's behaviour, such as *'I return extra change with a cashier makes a mistake; I like to be of service to others;* and, *I take others' interests into account.'* Participants were asked to use a rating scale to indicate how accurately each statement described them, ranging from *'very inaccurate'* to *'very accurate.'* Each statement is scored on a 5-point scale, with nine statements scored positively and 1 statement reversed scored. A total score is obtained by appropriate summation of individual statements. Higher scores are indicative of higher levels of conscientiousness (responsibility facet) related behaviour, on a continuum rather than categorical basis.

The reliability of the IPIP: Re scale is moderate ($\alpha = .66$) (Goldberg et al., 2006). The CPI has been used and validated in community samples as well as in illicit drug user populations (e.g., Bogg & Roberts, 2004; Roberts, Chernyshenko, Stark & Goldberg, 2005).

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT (Babor, de la Fuente, Saunders & Grant, 2001) was developed by the World Health Organization as a simple self-report method to screen for hazardous and harmful patterns of alcohol consumption, as well as symptoms of alcohol dependence. The AUDIT was developed and evaluated over two decades, and has been found to provide an accurate measure of alcohol-related risk across gender, age and cultures.

The AUDIT consists of 10 questions that may be administered orally or through written self-report. The AUDIT assesses recent alcohol use, alcohol dependence symptoms and alcohol related problems. The AUDIT includes questions such as: '*How often do you have a drink containing alcohol? How often do you have six or more drinks on one occasion? How often during the last year have you failed to do what was normally expected from you because of drinking? Have you or someone else been injured as a result of your drinking? Has a relative or a friend or a doctor or a another health worker been concerned about your drinking or suggested you cut down?*'

Each question is scored on a 5-point scale, with scores ranging from 0 to 4. The scores from each question are then summed appropriately to provide an overall score. A cut-off point of 8 is recommended to indicate hazardous and harmful alcohol use. Scores between 8 – 15 indicate a medium level of alcohol problems, a score of 16 and above represents a high level of alcohol problems, and scores of 20 and above are recommended for further diagnostic evaluation for alcohol dependence.

Many large studies have been conducted to evaluate the validity, reliability, sensitivity and specificity of the AUDIT in various clinical and community samples, including samples of illicit drug users, all of which have indicated the AUDIT as the best international screening test (e.g., Skipsey, Burelson & Kranzler, 1997). Since the AUDIT was first published in 1989, its reliability and validity has been established in research conducted in a variety of settings in many different countries, and has been translated into many languages.

Severity of Dependence Scale (SDS)

The SDS (Gossop, Darke, Griffiths, Hando, Powis, Hall & Strang, 1995) is a short and easily administered scale that takes less than 1 minute to complete. The SDS contains 5 items which are used to measure the degree of dependence experienced by users of different types of illicit drugs. Items are concerned with the individual's feelings of impaired control over their drug taking, and with the individual's preoccupation and anxieties about their drug taking. Sample questions include: *'During the past year…Did you think your use of (drug) was out of control? Did you worry about your use of (drug)? How difficult would you find it to stop or go without (drug)?'*

Each SDS item is scored on 4-point scale, ranging from 0 to 3. A total SDS score is obtained by appropriate summation of the individual items. Higher SDS scores are indicative of higher levels of dependence on a continuum rather than categorical or diagnostic basis.

Research in Australian and English samples of heroin, cocaine and amphetamine users indicates the SDS is suitable as a measure of dependence (Gossop et al., 1995). All SDS items load significantly with one single dependence factor, and total SDS scores are extremely highly correlated with the single dependence factor score. In addition, total SDS scores are related to behavioural patterns of drug taking, such as dose, frequency of use, duration of use, daily use and degree of contact with other drug users, which in themselves are indicators of dependence (Gossop et al., 1995).

Development of Risk Categories

Raw data included a number of single variables that were indicative of specific risk behaviours. To create an overall assessment of engagement in risk behaviour, single variables were combined to form definitive categories of risk engagement for the following domains: sexual risk, alcohol driving risk, cannabis driving risk, party drugs driving risk, crime risk, binge risk, overdose risk and injecting risk, each of which are defined below. Table 14 details the percentage of participants deemed to be at risk in each risk category.

Sexual Risk Category

Participants were defined to be at sexual risk if the participant reported they used barriers for sex with casual partners in the last 6 months less than 100% of the time, or if the participant reported they used barriers for sex with casual partners whilst using party drugs in the last 6 months less than 100% of the time.

Alcohol Driving Risk Category

Participants were defined to be at alcohol driving risk if they reported to have driven under the influence of alcohol (over 0.05 BAC) in the last 6 months.

Cannabis Driving Risk Category

Participants were defined to be at cannabis driving risk if they reported to have driven after taking cannabis in the last 6 months.

Party Drug Driving Risk Category

Participants were asked to report if they had driven after taking ecstasy, methamphetamine powder, methamphetamine base, crystal methamphetamine, cocaine, LSD, MDA, ketamine, GHB and amyl nitrite in the last 6 months. These single categories were then collapsed so that participants were given an overall rating of whether or not they had driven after taking any of the above types of party drugs in the last 6 months; and if so, they were defined to be at party drug driving risk.

Crime Risk Category

To define whether a participant engaged in crime, several single variables within the PDI (Matthews & Bruno, 2006) were considered. Namely, (1) if the participant reported they had been arrested in the last 12 months for dealing / trafficking, property crime, fraud, violent crime, alcohol and driving, and/or other drugs and driving; or (2) if the participant reported their drug use caused legal / police problems; or (3) if the participant self-reported engaging in property crime, dealing for cash profit, fraud and/or violent crime in the last month, then they were defined to have engaged in crime risk behaviours.

Binge Risk Category

To define whether a participant was at binge risk, several single variables within the PDI were combined. If the participant self-reported to have gone 48 hours without sleep on either ecstasy, methamphetamine powder, methamphetamine base, crystal methamphetamine, pharmaceutical stimulants, cocaine, LSD, MDA, ketamine, GHB and/or amyl nitrite, then they were defined to have engaged in binge risk behaviours.

Overdose Risk Category

To define whether a participant is at risk of overdose, several single variables within the PDI were again considered. If (1) the participant reported they drank more than 5 standard drinks of alcohol when using or coming down from ecstasy; or (2) if the participant self-reported overdosing on ecstasy and alcohol in the last 6 months; or (3) if the participant reported they used any type of methamphetamine when using or coming down from ecstasy; or (4) if the participant self-reported overdosing on ecstasy and any type of methamphetamine in the last 6 months; or (5) if the participant reported to use on average 2 or more ecstasy tablets at one time, then the participant was considered to be at risk of overdose.

Injecting Risk Category

To define whether a participant was at injecting risk, two variables within the PDI were combined; namely, if the participant reported they injected any drug in the

last 6 months, or if the participant reported their main route of administering ecstasy in the last 6 months was injecting, then they were defined to have engaged in injecting risk behaviours.

Table 14

Percentage of participants considered to be at risk in each risk category

Risk Category	% of Participants Engaging in this Risk
Sexual Risk	59.0
Alcohol Driving Risk	53.0
Cannabis Driving Risk	44.0
Party Drug Driving Risk	70.0
Crime Risk	26.0
Binge Risk	42.0
Overdose Risk	94.0
Injecting Risk	9.0

Statistical Analyses

Comparisons between risky and non-risky groups in relation to demographic, personality variables and measures of risk-taking in the PDI were initially examined using ANOVA analyses. Mann-Whitney U tests were used when parametric assumptions were violated. Binary logistic regression analysis in a backward step-wise fashion was then applied to determine whether personality variables usefully contributed to the prediction of group membership (i.e., REU who engaged in risks versus those REU who did not) in conjunction with other factors that might also be associated with risk taking behaviours (e.g., age and sex).

Chapter 9: Study 1 Results

Exploratory Analyses

Exploratory analyses were run to identify differences between REU categorised in risk and non-risk groups in terms of demographic and personality variables.

Demographic Variables

As discussed in preceding sections, previous research has illustrated the relationship between variables such as sex and age with measures of personality and risk-taking behaviours. For example, research has shown that conscientiousness related traits increase with age, while engagement in risky health behaviours decreases with age (Bogg & Roberts, 2004). In addition, sensation seeking and impulsivity has been found to be higher in males and younger people (Arnett, 1994). Therefore, it was expected that both sex and age would be significantly associated with some variables of risk-taking measured in this study.

Sex

There were no significant sex differences in relation to either of the sexual risk-taking variables. With regards to driving risk variables, those that had driven under the influence of alcohol and/or driven after taking cannabis in the last 6 months were significantly more likely to be male (67.1% v. 46.1%, $\chi 2$ [1, N = 85] = 7.2, p = 0.01 and 76.2% v. 43.8%, $\chi 2$ [1, N = 63] = 15.2, $p < 0.001$, respectively)

than those that had not. There were no significant sex differences in relation to driving soon after taking party drugs in the last 6 months (Table 15).

In relation to crime risk, those who had been arrested in the last 12 months, reported legal / police problems due to drug use, and/or dealt drugs for cash profit in the last month were significantly more likely to be male (88.2% v. 53.6%, $\chi 2$ [1, N = 17] = 7.6, p = 0.01; 90.9% v. 54.5%, $\chi 2$ [1, N = 11] = 5.6, p = 0.03 and 79.3% v. 52.7%, $\chi 2$ [1, N = 29] = 7.2, p = 0.01, respectively) than those that had not. There were no significant sex differences in relation to engaging in property crime, fraud or violent crime in the last month (Table 15).

Regarding binge risk variables, those who used any type of methamphetamine for more than 48 hours without sleep were significantly more likely to be male (68.8% v. 50.0%, $\chi 2$ [1, N = 64] = 6.2, p = 0.02) than those that had not. A trend was also apparent, whereby those who used any stimulant for more than 48 hours without sleep were more likely to be male (64.3% v. 50.0%, $\chi 2$ [1, N = 84] = 4.0, p = 0.06) than those that had not. There were no sex differences in relation to using ecstasy, pharmaceutical stimulants, cocaine, MDA, LSD, ketamine, GHB or amyl nitrate for more than 48 hours without sleep (Table 15).

With regards to overdose risk, participants who used two or more ecstasy pills in one session were significantly more likely to be male (63.2% v. 43.9%, $\chi 2$ [1, N = 133] = 6.6, p = 0.02) than those who did not. Sex was not found to be significantly related to any other overdose risk variable. Furthermore, there were no

significant sex differences noted in relation to injecting risk-taking behaviours. (Table 15).

Age

There were no significant age differences in relation to either of the sexual risk-taking variables. With regards to driving risk variables, participants who drove soon after taking party drugs in the last 6 months were significantly older (M = 25.0, SD = 5.0) than those participants who had not (M = 22.9, SD = 3.9: F [1, 159] = 8.1, p = 0.01, respectively). A trend was apparent whereby participants who drove under the influence of alcohol in the last 6 months (M = 24.8, SD = 5.2) were slightly older than participants who did not (M = 23.5, SD = 4.0: F [1, 159] = 3.2, p = 0.08). No significant age differences were noted in relation to driving after taking cannabis (Table 15).

In relation to crime risk, participants who engaged in violent crime in the last month were significantly younger (M = 18.7, SD = 1.2) than participants who did not (M = 24.4, SD = 5.0: F [1, 195] = 3.9, p = 0.05). No significant age differences were noted in relation to any other crime risk-taking variable. Furthermore, no significant age differences were noted in relation to any of the binge risk-taking variables (Table 15).

No significant results were observed regarding age and overdose risk-taking variables. However, a trend was apparent whereby those who used any type of methamphetamine to come down from ecstasy tended to be older (M = 27.4, SD =

6.0) than participants who did not (M = 24.2, SD = 4.9: F [1, 198] = 2.9, p = 0.09). Additionally, age was not significantly related to either injecting risk-taking variable (Table 15).

Sensation Seeking

AISS Intensity

No significant AISS Intensity score differences were noted in relation to either of the sexual risk-taking variables. With regards to driving risk variables, participants who reported they drove under the influence of alcohol in the last 6 months had significantly higher AISS Intensity scores (M = 28.6, SD = 4.0) than those who had not engaged in these behaviours (M = 25.6, SD = 4.6: F [1, 159] = 19.5, $p < 0.001$). No significant AISS Intensity score differences were noted in relation to driving under the influence of cannabis or party drugs. Additionally, no significant AISS Intensity score differences were noted in relation to any of the crime risk-taking variables (Table 15).

In relation to binge risk variables, those who reported use of stimulants, ecstasy, any type of methamphetamine, ketamine and/or GHB for more than 48 hours without sleep had significantly higher AISS Intensity scores (M = 28.0, SD = 4.1; M = 28.1, SD = 4.0; M = 28.2, SD = 4.0; M = 33.5, SD = 3.1 and M = 32.3, SD = 1.5, respectively) than those who did not (M = 26.0, SD = 4.6: F [1, 195] = 9.4, p = 0.003; M = 26.1, SD = 4.6: F [1, 195] = 9.9, p = 0.002; M = 26.2, SD = 4.6: F [1, 195] = 8.6, p = 0.004; M = 26.7, SD = 4.4: F [1, 195] = 9.4, p = 0.002 and M = 26.8,

SD = 4.4: F [1, 195] = 4.7, *p* = 0.03, respectively). No significant AISS Intensity score differences were noted in relation to using pharmaceutical stimulants, cocaine, MDA, LSD or amyl nitrate for more than 48 hours without sleep (Table 15).

Regarding overdose risk-taking variables, participants who used two or more ecstasy tablets in one session had significantly higher AISS Intensity scores (*M* = 27.6, *SD* = 4.4) than those who used less than two tablets per session (*M* = 25.7, *SD* = 4.1: F [1, 196] = 9.0, *p* = 0.003). No significant AISS Intensity score differences were noted in relation to any other overdose risk-taking variable (Table 15).

With regards to injecting risk behaviours, a trend was noted whereby participants who had injected any drug in the last 6 months had lower AISS Intensity scores (*M* = 24.8, *SD* = 3.3) than those who had not (*M* = 27.2, *SD* = 4.0: F [1, 35] = 3.8, *p* = 0.06) (Table 15).

AISS Novelty

With regards to sexual risk-taking behaviours, a trend was noted whereby participants who used barriers for sex with casual partners whilst using party drugs less than 100% of the time in the last 6 months had lower AISS Novelty scores (*M* = 30.1, *SD* = 4.0) than those who used barriers 100% of the time (*M* = 31.7, *SD* = 3.6: F [1, 78] = 3.1, *p* = 0.08) (Table 15).

With regards to driving risk variables, a trend was noted whereby participants who drove under the influence of alcohol in the last 6 months had slightly higher

AISS Novelty scores (*M* = 30.6, *SD* = 3.6) than those who did not (*M* = 29.4, *SD* = 3.7: F [1, 159] = 3.7, *p* = 0.06). No significant AISS Novelty score differences were noted in relation to driving under the influence of cannabis or other party drugs (Table 15).

In relation to crime risk variables, participants who committed an act of fraud in the last month had a significantly higher AISS Novelty score (*M* = 32.9, *SD* = 2.7) than those who did not (*M* = 30.0, *SD* = 3.7: F [1, 195] = 4.1, *p* = 0.04). No significant AISS Novelty score differences were noted in relation to any other crime risk variable (Table 15).

With regards to binge risk variables, participants who used ecstasy, any type of methamphetamine, LSD or GHB for more than 48 hours without sleep had significantly higher AISS Novelty scores (*M* = 30.8, *SD* = 3.6; *M* = 30.9, *SD* = 3.8; *M* = 32.3, *SD* = 3.9 and *M* = 35.0, *SD* = 1.0, respectively) than those who did not (*M* = 29.7, *SD* = 3.8: F [1, 195] = 3.9, *p* = 0.05; *M* = 29.8, *SD* = 3.7: F [1, 195] = 3.8, *p* = 0.05; *M* = 29.9, *SD* = 3.7: F [1, 195] = 6.4, *p* = 0.01 and *M* = 30.0, *SD* = 3.7: F [1, 195] = 5.3, *p* = 0.02, respectively). No significant AISS Novelty score differences were noted in relation to using pharmaceutical stimulants, cocaine, MDA, ketamine or amyl nitrate for more than 48 hours without sleep (Table 15).

AISS Novelty scores were not significantly related to any overdose risk-taking variable. With regards to injecting risk, a trend was noted whereby participants who had injected a drug in the last 6 months had lower AISS Novelty

scores (M = 28.8, SD = 4.2) versus those who had not (M = 31.4, SD = 2.9: Mann-Whitney U [1, 35] = 116.5, p = 0.10) (Table 15).

Conscientiousness

Analyses revealed that scores on the conscientiousness measure were not significantly associated with any variables of risk-taking in any domain (Table 15).

Summary of Exploratory Analyses: At-Risk Group versus Non-Risk Group

Table 16 details the differences in demographic and personality variables for participants in the at-risk group versus the non-risk group for each overall risk category. For the sexual risk category, only AISS Intensity scores differed between the groups, with REU in the at-risk group scoring significantly higher. For the alcohol driving risk category, REU in the at-risk group scored significantly higher on both AISS Intensity and Novelty, and were significantly more likely to be male and older than REU in the non-risk group. For the cannabis driving risk category and the crime risk category, REU in the at-risk group were significantly more likely to be male. For the party drug driving risk category, REU in the at-risk group were significantly older. For the binge risk category, REU in the at-risk group had significantly higher AISS Intensity scores than REU in the non-risk group. For the injecting risk category, REU in the at-risk group had significantly lower AISS Intensity scores and were significantly older than REU in the non-risk group. No significant differences between groups were found for the overdose risk category.

Table 15

Differences in Predictor Variables for Behavioural Risk Domains: Participants at Risk versus Participants Not at Risk (N = 200)

	AISS Intensity			**AISS Novelty**			**IPIP Responsibility**			**Sex**			**Age**		
	Ps at Risk	Ps Not at Risk	F	Ps at Risk	Ps Not at Risk	F	Ps at Risk	Ps Not at Risk	F	Risk % Male	Non-Risk % Male	$\chi 2$	Ps at Risk	Ps Not at Risk	F
Sexual Risk Variables															
How often used barrier for sex with casual partners last 6 months [*N*risk = 61(*24*)]	28.1 (4.9)	27.7 (4.1)	0.3	30.4 (4.0)	31.2 (3.7)	1.1	39.1 (5.5)	40.1 (5.1)	0.4	63.9	56.9	0.6	24.0 (6.8)	23.8 (4.2)	0.0
How often used barriers for sex with casual partners whilst using party drugs last 6 months [*N*risk = 41(*28*)]	28.4 (5.0)	28.0 (4.1)	0.2	30.1 (4.0)	31.7 (3.6)	3.1^	37.8 (5.1)	38.9 (5.8)	0.3	64.6	59.4	0.2	24.0 (5.3)	23.8 (4.1)	0.0
Alcohol Driving Risk Variables															
Driven under the influence of alcohol last 6 months [*N*risk = 85(*39*)]	28.6 (4.0)	25.6 (4.6)	19.5***	30.6 (3.6)	29.4 (3.7)	3.7^	38.4 (5.9)	37.9 (8.0)	0.1	67.1	46.1	7.2**	24.8 (5.2)	23.5 (4.0)	3.2^
Cannabis Driving Risk Variables															
Driven after taken cannabis last 6 months [*N*risk = 63(*33*)]	28.7 (3.8)	26.2 (4.8)	487.5#	30.2 (3.5)	29.7 (4.0)	0.7	38.3 (6.9)	37.4 (8.8)	0.2	76.2	43.8	15.2***	24.1 (3.7)	24.7 (5.7)	0.7

	AISS Intensity			AISS Novelty			IPIP Responsibility			Sex			Age		
Party Drug Driving Risk Variables															
Driven after taken party drugs (ecstasy, any methamphetamine, cocaine, LSD, MDA, ketamine, GHB and/or amyl nitrate) last 6 months [(*N*risk = 100(*59*)]	27.6 (4.6)	26.5 (4.4)	2.2	29.7 (3.8)	30.5 (3.4)	1.9	37.9 (8.0)	38.9 (3.5)	0.3	60.0	52.5	0.9	25.0 (5.0)	22.9 (3.9)	8.1**
Crime Risk Variables															
Arrested in the last 12 months for dealing / trafficking, property crime, fraud, violent crime, and/or driving under the influence of alcohol or other drugs [(*N*risk = 17(*7*)]	27.4 (3.9)	26.8 (4.5)	0.3	30.1 (4.2)	30.1 (3.7)	0.0	40.0 (4.0)	38.4 (6.7)	0.4	88.2	53.6	7.6**	24.6 (3.7)	24.3 (5.1)	0.0
Reported legal / police problems due to drug use [(*N*risk = 11(*5*)]	28.1 (3.6)	26.8 (4.5)	0.8	30.6 (3.5)	30.1 (3.8)	0.2	37.0 (6.0)	38.6 (6.7)	0.3	90.9	54.5	5.6*	25.1 (5.3)	24.3 (5.0)	0.3
Engaged in dealing for cash profit in the last month [(*N*risk = 29(*20*)]	28.1 (4.0)	26.7 (4.5)	2.4	29.5 (3.2)	30.2 (3.8)	0.9	37.2 (6.4)	38.8 (6.6)	0.1	79.3	52.7	7.2**	23.8 (4.3)	24.4 (5.1)	0.5
Binge Risk Variables															
Used any stimulant more than 48 hrs w/out sleep [(*N*risk = 84(*44*)]	28.0 (4.1)	26.0 (4.6)	9.4**	30.7 (3.7)	29.7 (3.7)	2.9^	38.2 (6.5)	38.9 (6.9)	0.3	64.3	50.0	4.0^	24.1 (4.2)	24.5 (5.5)	0.3
Used ecstasy more than 48 hrs w/out sleep [(*N*risk = 79(*41*)]	28.1 (4.0)	26.1 (4.6)	9.9**	30.8 (3.6)	29.7 (3.8)	3.9*	37.7 (6.4)	39.2 (6.8)	1.2	63.3	51.3	2.8	23.9 (4.1)	24.6 (5.5)	0.9
Used any methamphetamine more than 48 hrs w/out sleep [(*N*risk = 64(*34*)]	28.2 (4.0)	26.2 (4.6)	8.6**	30.9 (3.8)	29.8 (3.7)	3.8*	38.4 (6.7)	38.6 (6.7)	0.0	68.8	50.0	6.2*	24.6 (4.3)	24.1 (5.3)	0.4

	AISS Intensity			AISS Novelty			IPIP Responsibility			Sex			Age		
Used cocaine more than 48 hrs w/out sleep [(*N*risk = 17(*12*)]	28.2 (3.7)	26.7 (4.5)	1.8	30.6 (3.6)	30.1 (3.8)	0.4	36.8 (7.6)	38.8 (6.5)	0.1	64.7	55.2	0.6	24.3 (4.9)	24.3 (5.0)	0.0
Used LSD more than 48 hrs w/out sleep [(*N*risk = 17(*7*)]	27.9 (2.8)	26.8 (4.6)	1.1	32.3 (3.9)	29.9 (3.7)	6.4**	40.0 (2.9)	38.4 (6.9)	0.4	64.7	55.2	0.6	23.8 (4.8)	24.4 (5.0)	0.2
Overdose Risk Variables															
Drink 5 or more standard drinks of alcohol when using ecstasy [(*N*risk = 144(*65*)]	27.3 (4.6)	26.0 (3.8)	1.6	30.3 (3.7)	30.3 (3.8)	0.0	38.0 (6.6)	39.3 (6.3)	0.4	56.9	70.8	1.6	24.0 (3.7)	23.9 (3.9)	0.0
Drink 5 or more standard drinks of alcohol when coming down from ecstasy [(*N*risk = 74(*27*)]	28.3 (4.1)	26.8 (4.0)	2.4	30.8 (3.6)	29.7 (3.6)	1.5	38.2 (6.1)	38.2 (6.0)	0.0	67.6	61.9	0.2	24.1 (3.4)	23.8 (3.3)	0.1
Used any methamphetamine when using ecstasy [(*N*risk = 32(*15*)]	26.3 (4.1)	27.0 (4.5)	0.7	30.1 (3.9)	30.1 (3.7)	0.0	38.1 (8.8)	38.6 (6.2)	0.1	59.4	56.0	0.1	25.1 (4.7)	24.2 (5.0)	1.0
On average used 2 or more ecstasy tablets in one session [(*N*risk = 133(*70*)]	27.6 (4.4)	25.7 (4.1)	9.0**	30.3 (3.7)	29.9 (3.9)	0.5	37.9 (6.8)	40.1 (6.0)	2.2	63.2	43.9	6.6*	24.7 (5.3)	23.5 (4.4)	2.5
Injecting Risk Variables															
Injected any drug last 6 months [(*N*risk = 17(*9*)]	24.8 (3.3)	27.2 (4.0)	3.8^	28.8 (4.2)	31.4 (2.9)	116.5#^	38.0 (9.3)	40.4 (7.7)	0.4	76.5	70.0	0.2	27.4 (5.9)	26.4 (6.2)	0.3

Note. The number in italics for *N*risk represents the smaller sample size for the IPIP variable; # indicates use of Mann-Whitney; -- indicates no data available for computation. The following variables were excluded due to *N*risk < 10: engaging in property crime, fraud and violent crime in the past month; use of pharmaceutical stimulants, MDA, ketamine, GHB and amyl nitrate for more than 48 hours without sleep; overdosed on ecstasy and alcohol last 6 months; used any methamphetamine to come down from ecstasy; overdosed on ecstasy and any type methamphetamine last 6 months; injecting main route of ecstasy administration last 6 months.
^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 16

Differences in Predictor Variables for Overall Risk Domains: Participants at Risk versus Participants Not at Risk (N = 200)

	AISS Intensity			**AISS Novelty**			**IPIP Responsibility**			**Sex**			**Age**		
	Ps at Risk	Ps Not at Risk	F	Ps at Risk	Ps Not at Risk	F	Ps at Risk	Ps Not at Risk	F	Risk % Male	Non-Risk % Male	$\chi 2$	Ps at Risk	Ps Not at Risk	F
Sexual Risk Category	28.0	26.5	5.2*	30.6	29.9	1.6	39.0	38.7	0.03	63.6	54.8	1.4	24.1	24.3	0.1
[(*N*risk = 66(*27*)]	(4.8)	(4.1)		(3.9)	(3.5)		(5.3)	(6.5)					(6.7)	(3.6)	
Alcohol Driving Risk	28.6	25.6	19.5***	30.6	29.4	3.7^	38.4	37.9	0.1	67.1	46.1	7.2**	24.8	23.5	3.2^
Category	(4.0)	(4.6)		(3.6)	(3.7)		(5.9)	(8.0)					(5.2)	(4.0)	
[(*N*risk = 85(*39*)]															
Cannabis Driving Risk	28.7	26.2	487.5#	30.2	29.7	0.7	38.3	37.4	0.2	76.2	43.8	15.2***	24.1	24.7	0.7
Category	(3.8)	(4.8)		(3.5)	(4.0)		(6.9)	(8.8)					(3.7)	(5.7)	
[(*N*risk = 63(*33*)]															
Party Drug Driving Risk	27.6	26.5	2.2	29.7	30.5	1.9	37.9	38.9	0.3	60.0	52.5	0.9	25.0	22.9	8.1**
Category	(4.6)	(4.4)		(3.8)	(3.4)		(8.0)	(3.5)					(5.0)	(3.9)	
[(*N*risk = 100(*59*)]															
Crime Risk Category	27.8	26.6	2.6	30.2	30.1	0.0	37.7	38.9	0.7	78.8	48.6	14.3***	24.3	24.3	0.0
[(*N*risk = 52(*30*)]	(3.8)	(4.6)		(3.6)	(3.8)		(5.9)	(6.9)					(4.7)	(5.1)	
Binge Risk Category	27.9	26.1	8.2**	30.6	29.8	2.3	38.2	38.9	0.3	63.9	50.4	3.5	24.1	24.4	0.2
[(*N*risk = 83(*44*)]	(4.0)	(4.6)		(3.7)	(3.8)		(6.5)	(6.9)					(4.2)	(5.5)	
Overdose Risk Category	27.0	25.6	1.1	30.2	28.4	2.6	38.2	42.2	2.5	58.0	33.3	2.8	24.4	22.9	1.0
[(*N*risk = 188(*92*)]	(4.5)	(3.7)		(3.7)	(3.5)		(6.7)	(3.7)					(5.1)	(3.6)	
Injecting Risk Category	24.8	27.1	4.0*	28.8	30.2	2.3	38.0	38.6	0.1	76.5	54.4	3.1	27.4	24.0	7.3**
[(*N*risk = 17(*9*)]	(3.3)	(4.5)		(4.2)	(3.7)		(9.3)	(6.4)					(5.9)	(4.8)	

Note. The number in italics for *N*risk represents the smaller sample size for the IPIP variable.
Mann-Whitney U Test
^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Binary Logistic Regression Findings

Binary logistic regression analysis in a backward step-wise fashion was applied to determine whether personality variables (AISS Intensity, AISS Novelty and IPIP Responsibility) usefully contributed to the prediction of group membership (i.e., REU who engage in risk-taking behaviours versus REU who do not), in addition to other factors that might also be associated with risk-taking behaviours, such as age and sex.

Calculations were initially run including all measures of personality; which, due to the IPIP Responsibility Scale only being administered to half of the total sample, limited the overall sample size to a maximum 100 for each risk category. Analyses of these initial regression models revealed that the personality variable of conscientiousness did not significantly predict any category of risk, except for the overdose risk category. Therefore, for those categories where the IPIP Responsibility Scale was not a significant predictor, regression analyses were re-run without this variable, providing a maximum sample size of 200, and therefore greater statistical power. Thus, in the analyses and tables to follow, the IPIP Responsibility Scale has not been included with exception of the overdose risk category.

Prediction of Sexual Risk-Taking Behaviours

Table 17 shows the binary logistic regression analyses for sexual risk-taking. A test of the full model was not significant, χ^2 (4, N = 45) = 5.62, p = 0.23. The final model, following the stepwise removal of non-significant variables, consisted of the

AISS Intensity variable, which significantly predicted sexual risk-taking behaviour, χ^2 (1, N = 45) = 5.20, p = 0.02. The variance accounted for by the final model however was small, with the Cox and Snell R^2 = 0.03 and the Nagelkerke R^2 = 0.04. The final model correctly predicted 9.1% individuals at sexual risk and 97.6% of individuals not at sexual risk, with an overall prediction rate of 66.7%.

These findings imply that REU who scored higher on AISS Intensity measures were more likely to have demonstrated behaviours that defined them to be at greater sexual risk. However, the model was clearly not useful, given the small proportion of variance explained and the low percentage of individuals at risk that were correctly predicted.

Table 17

Summary of Logistic Regression Analyses of Variables Predicting Sexual Risk-Taking Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 0.10 (0.36)	0.08	0.91	0.45	1.82
Age	- 0.02 (0.04)	0.24	0.98	0.92	1.05
AISS Novelty	0.02 (0.05)	0.14	1.02	0.93	1.12
AISS Intensity	0.07 (0.04)	2.69^	1.07	0.99	1.17
Constant	- 2.61 (1.76)	2.20	0.07	-	-
Model Summary: Cox and Snell R^2 = 0.03, Nagelkerke R^2 = 0.04. Model χ^2 (4, N = 45) = 5.62, p = 0.23. 7.6% correctly predicted (at risk); 98.4% correctly predicted (not at risk); 66.7% correctly predicted (overall)					
Final Stepwise Entry Model					
AISS Intensity	0.08 (0.04)	4.99*	1.08	1.01	1.16
Constant	- 2.82 (1.00)	7.90**	0.06	-	-
Model Summary: Cox and Snell R^2 = 0.03, Nagelkerke R^2 = 0.04. Model χ^2 (1, N = 45) = 5.20, p = 0.02. 9.1% correctly predicted (at risk); 97.6% correctly predicted (not at risk); 66.7% correctly predicted (overall)					

Note. Dashes indicate coefficients that were not calculated by the analysis. The IPIP Responsibility Scale was excluded as previous analyses indicated it was not a significant predictor variable.
^p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

Prediction of Driving Risk-Taking Behaviours

Alcohol Driving Risk

Table 18 shows the binary logistic regression analyses for alcohol driving risk. A test of the full model was significant, χ^2 (4, N = 81) = 22.35, $p < 0.001$. Following stepwise removal of redundant predictors, the final model consisted of the AISS Intensity variable and age, which together significantly predicted alcohol driving risk-taking behaviour, χ^2 (2, N = 81) = 22.02, $p < 0.001$. The variance accounted for by the final model was large, with the Cox and Snell $R^2 = 0.13$ and the Nagelkerke $R^2 = 0.17$. The final model correctly predicted 68.2% individuals at alcohol driving risk and 67.1% of individuals not at risk, with an overall prediction rate of 67.7%. These findings suggest that REU who were older and REU who scored higher on the AISS Intensity measure were more likely to have driven under the influence of alcohol in the last 6 months.

Table 18

Summary of Logistic Regression Analyses of Variables Predicting Alcohol Risk Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 0.19 (0.38)	0.26	0.83	0.39	1.74
Age	0.07 (0.04)	2.80^	1.07	0.99	1.16
AISS Novelty	0.01 (0.05)	0.08	1.01	0.92	1.12
AISS Intensity	0.15 (0.05)	9.69**	1.16	1.06	1.28
Constant	- 5.91 (2.04)	8.40**	0.00	-	-
Model Summary: Cox and Snell R^2 = 0.13, Nagelkerke R^2 = 0.17. Model χ^2 (4, N = 81) = 22.35, p < 0.001. 70.6% correctly predicted (at risk); 67.1% correctly predicted (not at risk); 68.9% correctly predicted (overall)					
Final Stepwise Entry Model					
Age	0.07 (0.04)	3.11^	1.07	0.99	1.16
AISS Intensity	0.16 (0.04)	15.98***	1.18	1.09	1.28
Constant	- 6.05 (1.52)	15.85***	0.00	-	-
Model Summary: Cox and Snell R^2 = 0.13, Nagelkerke R^2 = 0.17. Model χ^2 (2, N = 81) = 22.02, p < 0.001. 68.2% correctly predicted (at risk); 67.1% correctly predicted (not at risk); 67.7% correctly predicted (overall)					

Note. Dashes indicate coefficients that were not calculated by the analysis. The IPIP Responsibility Scale was excluded as previous analyses indicated it was a non significant predictor variable.
^p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

Cannabis Driving Risk

Table 19 displays the binary logistic regression analyses for cannabis driving risk. A test of the full model was significant, χ^2 (4, N = 63) = 20.95, p < 0.001. Following stepwise removal of redundant predictors, the final model consisted of AISS Intensity and sex, which together significantly predicted cannabis driving risk-taking behaviour, χ^2 (2, N = 63) = 19.56, p < 0.001. The variance accounted for by the final model was medium to large, with the Cox and Snell R^2 = 0.11 and the Nagelkerke R^2 = 0.16. The final model correctly predicted 46.0% individuals at risk and 76.5% of individuals not at risk, with an overall prediction rate of 64.6%. These findings suggest that REU who were male and REU scoring higher on the AISS

Intensity measure were more likely to have driven after taking cannabis in the last 6 months.

Table 19

Summary of Logistic Regression Analyses of Variables Predicting Cannabis Driving Risk Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 1.08 (0.40)	7.18**	0.34	0.16	0.75
Age	- 0.03 (0.04)	0.45	0.97	0.90	1.05
AISS Novelty	- 0.05 (0.05)	0.85	0.95	0.86	1.06
AISS Intensity	0.10 (0.05)	4.23*	1.10	1.01	1.21
Constant	- 0.66 (1.92)	0.12	0.52	-	-
Model Summary: Cox and Snell $R^2 = 0.12$, Nagelkerke $R^2 = 0.17$. Model χ^2 (4, $N = 63$) = 20.95, $p < 0.001$. 52.4% correctly predicted (at risk); 73.5% correctly predicted (not at risk); 65.2% correctly predicted (overall)					
Final Stepwise Entry Model					
Sex	- 1.03 (0.40)	6.78**	0.36	0.16	0.78
AISS Intensity	0.08 (0.04)	3.55^	1.09	1.00	1.18
Constant	- 2.32 (1.29)	3.22^	0.01	-	-
Model Summary: Cox and Snell $R^2 = 0.11$, Nagelkerke $R^2 = 0.16$. Model χ^2 (2, $N = 63$) = 19.56, $p < 0.001$. 46.0% correctly predicted (at risk); 76.5% correctly predicted (not at risk); 64.6% correctly predicted (overall)					

Note. Dashes indicate coefficients that were not calculated by the analysis. The IPIP Responsibility Scale was excluded as previous analyses indicated it was a non significant predictor variable.
^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Party Drug Driving Risk

Table 20 shows the binary logistic regression analyses for party drug driving risk, which included driving after taking ecstasy, any type of methamphetamine, cocaine, LSD, MDA, ketamine, GHB and amyl nitrate in the last 6 months. A test of the full model was significant, χ^2 (4, $N = 63$) = 17.12, $p = 0.002$. Following stepwise removal of redundant predictors, the final model consisted of age and both AISS sensation seeking variables, which together significantly predicted party drug driving

risk-taking behaviour, χ^2 (3, N = 63) = 17.12, p = 0.001. The variance accounted for by the final model was medium, with the Cox and Snell R^2 = 0.10 and the Nagelkerke R^2 = 0.14. The final model correctly predicted 86.0% individuals at party drug driving risk and 42.6% of individuals not at risk, with an overall prediction rate of 69.6%. These findings suggest that REU who were older, REU who had higher levels of AISS Intensity and REU who had lower levels of AISS Novelty were predictive of REU who had driven under the influence of party drugs in the past 6 months.

Table 20

Summary of Logistic Regression Analyses of Variables Predicting Party Drug Driving Risk Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 0.01 (0.39)	0.00	0.99	0.46	2.14
Age	0.15 (0.05)	7.93**	1.16	1.05	1.29
AISS Novelty	- 0.11 (0.05)	4.66*	0.90	0.81	0.99
AISS Intensity	0.09 (0.05)	3.28^	1.09	0.99	1.20
Constant	- 2.09 (2.10)	0.99	0.12	-	-
Model Summary: Cox and Snell R^2 = 0.10, Nagelkerke R^2 = 0.14. Model χ^2 (4, N = 63) = 17.12, p = 0.002. 86.0% correctly predicted (at risk); 42.6% correctly predicted (not at risk); 69.6% correctly predicted (overall)					
Final Stepwise Entry Model					
Age	0.15 (0.05)	7.94**	1.16	1.05	1.29
AISS Novelty	- 0.11 (0.05)	4.66*	0.90	0.81	0.99
AISS Intensity	0.09 (0.04)	4.18*	1.09	1.00	1.19
Constant	- 2.11 (1.94)	1.19	0.12	-	-
Model Summary: Cox and Snell R^2 = 0.10, Nagelkerke R^2 = 0.14. Model χ^2 (3, N = 63) = 17.12, p = 0.001. 86.0% correctly predicted (at risk); 42.6% correctly predicted (not at risk); 69.6% correctly predicted (overall)					

Note. Dashes indicate coefficients that were not calculated by the analysis. The IPIP Responsibility Scale was excluded as previous analyses indicated it was a non significant predictor variable.
^p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

Prediction of Crime Risk-Taking Behaviours

Binary logistic regression analyses for crime risk-taking behaviours indicates a test of the full model was significant, χ^2 (4, N = 99) = 15.37, p = 0.004. Following stepwise removal of redundant predictors, the final model consisted only of sex, which significantly predicted crime risk-taking behaviour, χ^2 (1, N = 99) = 14.48, p < 0.001. The variance accounted for by the final model was medium, with the Cox and Snell R^2 = 0.07 and the Nagelkerke R^2 = 0.10. The final model was not successful in predicting any individuals at risk and therefore the usefulness of this model is poor.

Prediction of Binge Risk-Taking Behaviours

Table 21 shows the binary logistic regression analyses for binge risk-taking behaviours. A test of the full model was not significant, χ^2 (4, N = 97) = 8.91, p = 0.06. Following stepwise removal of redundant predictors, the final model consisted of the AISS Intensity variable, which significantly predicted binge risk-taking behaviour, χ^2 (1, N = 97) = 8.08, p = 0.004. The variance accounted for by the final model was small, with the Cox and Snell R^2 = 0.04 and the Nagelkerke R^2 = 0.05. The final model correctly predicted 28.0% individuals at binge risk and 82.6% of individuals not at risk, with an overall prediction rate of 59.9%.

According to the Wald chi-square criterion, binge risk-taking behaviour was predicted by the personality variable of AISS Intensity, suggesting that REU with higher levels of AISS Intensity were more likely to have engaged in binging behaviours. However, the model's usefulness is questioned due to the poor variance it explains and the low percentage of at-risk individuals that are correctly predicted.

Table 21

Summary of Logistic Regression Analyses of Variables Predicting Binge Risk-Taking Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 0.24 (0.33)	0.53	0.79	0.41	1.51
Age	- 0.02 (0.03)	0.27	0.98	0.92	1.05
AISS Novelty	0.02 (0.04)	0.15	1.02	0.93	1.11
AISS Intensity	0.08 (0.04)	3.65^	1.08	1.00	1.17
Constant	- 2.44 (1.64)	2.22	0.09	-	-
Model Summary: Cox and Snell R^2 = 0.04, Nagelkerke R^2 = 0.06. Model χ^2 (4, N = 97) = 8.91, p = 0.06. 25.6% correctly predicted (at risk); 80.9% correctly predicted (not at risk); 57.9% correctly predicted (overall)					
Final Stepwise Entry Model					
AISS Intensity	0.10 (0.03)	7.64**	1.10	1.03	1.18
Constant	- 2.91 (0.95)	9.44**	0.06	-	-
Model Summary: Cox and Snell R^2 = 0.04, Nagelkerke R^2 = 0.05. Model χ^2 (1, N = 97) = 8.08, p = 0.004. 28.0% correctly predicted (at risk); 82.6% correctly predicted (not at risk); 59.9% correctly predicted (overall)					
Note. Dashes indicate coefficients that were not calculated by the analysis. The IPIP Responsibility Scale was excluded as previous analyses indicated it was a non significant predictor variable. ^p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001					

Prediction of Overdose Risk Taking Behaviours

Table 22 shows the binary logistic regression analyses for overdose risk-taking behaviours. It is important to note here that only 6% of the entire sample was defined to not be at risk of overdose. This potentially could be due to the broad definition of what constituted 'overdose risk.' Therefore, the prediction of overdose risk-taking behaviours was more difficult, as it was unlikely that predictor variables would distinguish the small percentage of REU that were not overdose risks from the majority who were.

When performing these analyses, the full model was non-significant; however, when the IPIP Responsibility scale was included, the model was able to

provide a statistically significant differentiation between risk groups. In addition, there was an increased percentage of variance accounted for; however, the sample size in these calculations was limited to 99 due to the limited number of participants reporting on the conscientiousness measure.

A test of the full model was not significant, χ^2 (5, N = 99) = 9.09, p = 0.11. Following stepwise removal of redundant predictors, the final model consisted of age and conscientiousness, which significantly predicted overdose risk-taking behaviour, χ^2 (2, N = 99) = 7.69, p = 0.02. The variance accounted for by the final model was medium to large, with the Cox and Snell R^2 = 0.08 and the Nagelkerke R^2 = 0.19. The final model correctly predicted 100.0% individuals at overdose risk and 0.0% of individuals not at risk, with an overall prediction rate of 92.9%. However, this model was not useful as it predicted everyone to be at risk and therefore did not discriminate between risk and non-risk taking groups.

Table 22

Summary of Logistic Regression Analyses of Variables Predicting Overdose Risk-Taking Behaviour

Full Model	B (SE)	Wald	Odds Ratio	95% Confidence Interval	
				Lower	Upper
Sex	- 0.60 (0.93)	0.42	0.55	0.09	3.41
Age	0.21 (0.16)	1.76	1.23	0.91	1.68
AISS Novelty	0.11 (0.13)	0.76	1.12	0.87	1.44
AISS Intensity	- 0.09 (0.12)	0.53	0.91	0.72	1.16
IPIP Responsibility	- 0.16 (0.10)	2.66^	0.85	0.70	1.03
Constant	3.82 (6.83)	0.31	45.46	-	-
Model Summary: Cox and Snell R^2 = 0.09, Nagelkerke R^2 = 0.22. Model χ^2 (5, N = 99) = 9.09, p = 0.11. 100.0% correctly predicted (at risk); 14.3% correctly predicted (not at risk); 93.9% correctly predicted (overall)					
Final Stepwise Entry Model					
Age	0.26 (0.15)	2.77^	1.29	0.96	1.75
IPIP Responsibility	- 0.18 (0.11)	2.92^	0.84	0.68	1.03
Constant	3.92 (5.30)	0.55	50.38	-	-
Model Summary: Cox and Snell R^2 = 0.08, Nagelkerke R^2 = 0.19. Model χ^2 (2, N = 99) = 7.69, p = 0.02. 100.0% correctly predicted (at risk); 0.0% correctly predicted (not at risk); 92.9% correctly predicted (overall)					

Note. Dashes indicate coefficients that were not calculated by the analysis.
^p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

Prediction of Injecting Risk-Taking Behaviours

Binary logistic regression analyses for injecting risk-taking behaviours indicates a test of the full model was significant, χ^2 (4, N = 98) = 15.89, p = 0.003. Following stepwise removal of redundant predictors, the final model consisted of sex and the AISS Intensity variable, which significantly predicted injecting risk-taking behaviour, χ^2 (2, N = 98) = 12.87, p = 0.002. The variance accounted for by the final model was medium, with the Cox and Snell R^2 = 0.06 and the Nagelkerke R^2 = 0.14. The final model was not successful in predicting any individuals at risk.

According to the Wald chi-square criterion, injecting risk-taking behaviour was predicted by sex and AISS Intensity, suggesting that REU who were male that

REU who scored lower on AISS Intensity were more likely to have engaged in injecting risk-taking behaviours. However, this model was not useful, as it was unable to correctly predict any individuals at risk.

Chapter 10: Study 1 Discussion

This study aimed to investigate the usefulness of personality traits, i.e., rash-spontaneous impulsivity and conscientiousness (responsibility facet), in differentiating between REU who engage in risk-taking behaviours versus REU who do not, and their power to predict REU's engagement in risk-taking behaviour.

Drug Use Patterns

The most commonly used drugs in the current sample were ecstasy, alcohol, cannabis and methamphetamine powder. This is consistent with findings from the AIHW (2008) survey regarding types of illicit drugs recently consumed in a larger, national sample. In the current sample, generally speaking, REU were young adults (mean age 24.3) who lived in rental accommodation (72%), were employed and / or studying (89%) and had achieved Year 12 qualifications or beyond (83%). Approximately half of the sample was single. This profile is similar to other groups of REU studied within Australia (e.g., Allott & Redman, 2006; Breen, Degenhardt, Kinner, Bruno, Jenkinson, Matthews & Newman, 2006; Degenhardt, Dillon, Duff & Ross, 2004; Matthews, Bruno, Johnson, Black, Degenhardt & Dunn, 2009).

Demographic Variable Differences between REU at Risk and REU Not at Risk, and their Ability to Predict Engagement in Risk-Taking Behaviour

In relation to sex, it was expected that more males than females REU would engage in risk-taking behaviours. This hypothesis was supported in that more males

than females were represented in the risky group for every risk-taking domain, significantly so for the domains of crime risk, alcohol driving risk and cannabis driving risk. These findings support previous research that concluded more males tend to engage in risk-taking behaviours than females (e.g., Arnett, 1990; Zuckerman, Eysenck & Eysenck, 1978), and demonstrates this finding remains true in a sample of REU, which as a group may be defined as more risk-taking than the general population.

In relation to the ability of sex to predict REU's engagement in risk-taking behaviour, sex proved non-significant in relation to the domains of sexual and binge risk-taking. Whilst sex was a significant predictor variable for the domains of crime and injecting risk, the final models generated for these risk categories were not useful, given they were unable to successfully predict any REU at risk. However, sex was a significant predictor of REU who had driven under the influence of cannabis. Together with rash-spontaneous impulsivity (intensity), these variables explained a moderate amount of the variance, with the final model correctly predicting 46% of REU at risk. In relation to sex, REU who were male were more likely to have driven after taking cannabis.

Regarding age, younger REU were expected to engage in more risk-taking behaviours than older REU. Results indicated there were no significant differences between groups for any of the risk-taking domains, with the exception of party drug driving risk and injecting risk, where REU in the at-risk group were older than REU in the non risk group.

Age was not a significant predictor variable with regards to predicting REU at risk for the domains of sexual and binge risk-taking. Whilst age, together with conscientiousness, were significant predictor variables for the overdose risk domain, the final model generated was not useful as it was unable to successfully predict any REU at risk. However, coupled with rash-spontaneous impulsivity (intensity), age was a significant predictor of REU who had driven under the influence of alcohol and party drugs. For both of these categories, age and rash-spontaneous impulsivity explained a moderate amount of the variance and successfully predicted most participants at risk (68 – 86%). In relation to age, these findings suggest that REU who drove under the influence tended to be older.

First and foremost, it should be noted that on a whole, the sample of REU were relatively young, with a mean age of 24 years. However, there may be other possible reasons behind the age related findings. In relation to driving risk, this may be explained in terms of access, in that older REU may be more likely to hold an unrestricted drivers licence and possess their own personal vehicle in comparison to younger REU. It is also possible that younger REU may be on learner or provisional licence types, which restrict them to a zero-level blood alcohol content (BAC) when driving (as compared to the 0.05 BAC for unrestricted licences); therefore, younger REU on such licence types may be more inclined to organise alternative transport when partying due to the zero tolerance. However, it should be noted that some research regarding driving risk (e.g., Kelly, Darke & Ross, 2004) has defined age 35 and below as young. Therefore, in comparison with other driving risk research, at risk, older REU in the current study would actually be considered young, which may also explain these disparate findings.

With regards to the injecting risk finding, it could be that older REU have had more years of illicit drug experimentation and use, and it is possible that older REU have used a larger variety of illicit drugs and may have more entrenched drug habits, such as injecting. However, only a very small percentage (9%) of the sample had actually injected a drug in the last 6 months, so this finding may also be influenced by a small sample size. In relation to the crime risk-taking domain, the result that REU in both the risk and non risk groups were equal in age could be a reflection of the fact that the overall sample was relatively young, and the proportion of the sample defined to be at crime risk was relatively low (26%).

Rash-Spontaneous Impulsivity: Differences between REU at Risk and REU Not at Risk, and its Ability to Predict Engagement in Risk-Taking Behaviour

Scores on rash-spontaneous impulsivity (intensity) were significantly higher for REU in the at risk group for the domains of sexual risk, alcohol driving risk and binge risk, suggesting that REU who engaged in these risk-taking behaviours had higher scores on the Intensity subscale of the AISS than REU in the non risk group, which may describe them as more rash-impulsive than their non risk counterparts. REU in the at risk group had higher rash-spontaneous impulsivity (intensity) scores, although not significantly greater than REU in the non risk group, for the domains of cannabis and party drug driving risk, crime risk and overdose risk. These findings are congruent with other research (e.g., Arnett, 1990; Arnett, 1994; Arnett, 1997; Greene, Krcmar, Walters, Rubin & Hale, 2000; Horvath & Zuckerman, 1993) that have indicated a positive relationship between rash-spontaneous impulsivity and risk-taking behaviours such as these. However, the present findings add to previous

research findings in that these relationships have now been established in a 'risky' cohort of regular ecstasy consumers.

Interestingly, rash-spontaneous impulsivity (intensity) scores were significantly lower for REU in the injecting risk category compared to REU in the non risk injecting group, suggesting that REU who injected a drug in the last 6 months were less rash impulsive than REU who did not inject a drug in the last 6 months. This is contrary to other research findings (e.g., Checkley, Thompson, Crofts & Mijch, 1996; Lapworth, Dawe, Davis, Kavanagh, Young & Saunders, 2009), which suggests that heightened impulsivity is associated with injecting drug use. Although unlikely, this finding could be related to the different impulsivity measures used in each of these studies. However, this result is most likely due to an aberration of the participants interviewed; or, related to the very small proportion of REU whose behaviours classified them in the injecting risk category (9%). However, further research is needed to clarify this result.

Scores on the Novelty subscale of the rash-spontaneous measure did not differ significantly between groups for any of the risk-taking domains. This finding suggests that the individual differences in the propensity to seek out intense stimuli as opposed to novel stimuli may be more important in terms of risk-taking behaviour. Additionally, this may also suggest that intensity related factors of environmental situations may be more influential than the novel factors of that same environment in terms of influencing risk-taking behaviour. Therefore, it is possible that the Intensity subscale of the AISS is a better match conceptually to Dawe and

Loxton's (2004) definition of rash-spontaneous impulsivity than the Novelty subscale.

In terms of predictive utility, rash-spontaneous impulsivity (intensity) was a significant predictor variable with regards to predicting REU whose behaviours categorised them in the at risk group for the sexual risk, alcohol driving risk, cannabis driving risk, party drug driving risk, binge risk and injecting risk domains. However, impulsivity (intensity) was not a useful predictor variable for the sexual risk, binge risk and injecting risk domains, due to the poor amount of variance explained and the low percentage of individuals successfully predicted to be at risk.

It is interesting that rash-spontaneous impulsivity was not a useful predictor in relation to sexual risk-taking, given that previous research has shown elevated impulsivity as predictive of sexual risk-taking behaviours (e.g., Cooper, Agocha & Sheldon 2000; Dolezal, Meyer-Bahlburg, Remien & Petkova, 1997; Justus, Finn & Steinmetz, 2000; Schafer, Blanchard & Fals-Stewart, 1994). One explanation for this finding may be that the REU sampled were well educated, with 83% having obtained Year 12 qualifications or beyond. Therefore, it could be inferred that the sample was well informed regarding safe sexual practices. However, over half the sample (59%) demonstrated behaviours that defined them to be at sexual risk. Additionally, the effects of binge alcohol use on sexual risk-taking has been documented, in that REU who binge drink whilst also taking ecstasy tend to take greater sexual risks (e.g., Breen et al., 2006). In the current sample, it is unknown if the REU defined to be at sexual risk had only used ecstasy, or if they had also been intoxicated by alcohol at the time of sexual risk-taking. This could be an important

factor, given the different effects of ecstasy versus alcohol, in that a person only under the influence of ecstasy may retain more of their mental facilities than a person under the combined effect of ecstasy and alcohol, which may in turn affect the decision-making process with regards to using protective measures when having sex with a casual partner.

Rash-spontaneous impulsivity was more useful as a predictor variable within the driving domains. With regards to predicting alcohol driving risk, rash-spontaneous impulsivity (intensity) was a significant predictor of REU who had driven under the influence and proved to be a useful model explaining a moderate amount of variance, and correctly predicting most participants at risk (68%). Rash-spontaneous impulsivity (intensity) approached significance as a predictor variable for REU who had driven under the influence of cannabis. Interestingly, rash-spontaneous impulsivity also significantly predicted REU who had driven under the influence of party drugs. In the final model, Intensity and Novelty acted inversely; with the final model suggesting that REU who had higher levels of Intensity and REU who had lower levels of Novelty were both predictive of driving under the influence of party drugs. This final model proved useful, correctly predicting 86% of REU at risk. This finding makes evident that the Intensity and Novelty subscales of the AISS conceptually differ and measure alternative aspects of the broader sensation seeking / impulsivity construct. Generally, taking into account all of Study 1 findings, it appears that the Novelty subscale of the AISS does not conceptually measure rash-spontaneous impulsivity as defined by Dawe and Loxton's (2004) model; the Intensity subscale appears to be a better conceptual match to this construct.

These findings add to previous research that has shown higher levels of rash-spontaneous impulsivity are associated with driving under the influence of alcohol and cannabis (see Table 6 for review). Results from the present research further implicate the importance of rash-spontaneous impulsivity as a predictive factor in alcohol and drug driving behaviour a sample of REU, who may collectively be deemed a 'risky' cohort.

Conscientiousness: Differences between REU at Risk and REU Not at Risk, and its Ability to Predict Engagement in Risk-Taking Behaviour

The responsibility facet of conscientiousness was expected to differentiate between REU at risk and REU not at risk for all risk-taking categories, in that REU at risk were expected to have significantly lower levels of conscientiousness than REU not at risk. This hypothesis was not supported, as analyses revealed no significant differences in conscientiousness scores between REU who engaged in risk-taking behaviours versus those who did not. Furthermore, conscientiousness was not a significant predictor variable with regards to predicting which REU were at risk in any risk-taking domain, with the exception of the overdose category. Despite its significance in predicting REU at risk of overdose, the final model generated was clearly not useful, given it was unable to successfully predict REU at risk.

These findings were very surprising given that previous research (e.g., Bogg & Roberts, 2004) has shown significant negative relationships between conscientiousness and various health related risk-taking behaviours. The failure to

replicate such findings may be due to the relatively small sample size that completed the conscientiousness measure in relation to the entire sample size. A lack of significant association may also be due to the multi-faceted nature of the conscientiousness construct, in that it is possible the IPIP:Re assessment measure did not tap into the conscientiousness construct the way in which intended; however, there is no evidence this is the case. Additionally, given the socially desirable nature of some questions on the assessment (e.g., *'I return extra change when a cashier makes a mistake; I like to be of service to others;* and *I take others' interests into account'*), it is possible that some participants may have answered in a socially desirable, biased manner, which may have artificially inflated their conscientiousness score. It is also possible that the sample group as a whole scored poorly (or highly) on the conscientiousness measure. Norms are not available for the IPIP:Re measure; however, the highest score achievable on the IPIP:Re, 50, indicates an individual is highly conscientious. The current sample appeared to report moderate to high levels of conscientiousness (M = 38.51, SD = 6.56, 1st quartile = 36, 3rd quartile = 43). Therefore, it is possible there was too little variation in conscientiousness scores to have a meaningful impact on risk-taking behaviour.

Limitations

One limitation of the current study was its cross-sectional design; however, this type of design is often employed in alcohol and drug research, and therefore the results of this study are comparable with other similar research studies. A further limitation is the study's reasonably small sample size of 200 subjects. However, the characteristics of the sample were similar to other groups of REU studied across

Australia (e.g., Breen et al., 2006; Degenhardt et al., 2004; Matthews & Bruno, 2006), and therefore are deemed to be a representative sample of frequent ecstasy users. This study also gathered data through face to face interviews; therefore, there is the potential for under-reporting, or reporting in a socially biased manner due to interviewer presence.

Additionally, due to the cross-sectional design, the data collected with regards to rash-spontaneous impulsivity cannot determine the direction of the impulsivity – risk-taking relationship. In other words, the data collected is not conclusive as to whether high levels of rash-spontaneous impulsivity is a predisposing factor, or a consequence of drug use, given that prolonged drug use is thought to alter regions of the brain involved in rash-spontaneous impulsivity (Loxton et al., 2008; Jentsch & Taylor, 1999). However, prospective studies have found that impulsivity measures in childhood and adolescence is predictive of later drug use (e.g., Brook, Whiteman, Gordon & Cohen, 1986; Brook, Morojele, Pahl & Brook, 2006; Caspi, Begg, Dickson, Harrington, Langley, Moffitt & Silva, 1997). Therefore, it is likely that an impulsive temperament predisposes individuals to drug experimentation and use, and that subsequent impairment of self-regulatory controls due to neural adaptation, may both escalate drug use and risky drug-related behaviour (Loxton et al., 2008; Dawe, Gullo & Loxton, 2004).

Lastly, the participants in this study collectively can be considered "risk-takers" by virtue of their regular illicit drug use. Therefore, this study provided an overall sample of risk-takers. This is potentially a limitation with regards to confidently being able to generalise the findings to other populations.

Conclusions and Future Research

On a whole, findings of the current study contribute to the validity of models that implicate rash-spontaneous impulsivity in substance use and risk-taking behaviours (e.g., Dawe & Loxton, 2004), whilst providing contrary results to models that implicate conscientiousness' role in risk-taking behaviours (e.g., Bogg & Roberts, 2004). Whilst this study was exploratory in nature, these preliminary findings suggest that the rash-spontaneous factor of impulsivity plays a role in risky behaviours over and beyond just ecstasy use. The role of conscientiousness is unclear.

As stated previously, the participants in this study collectively are considered "risk-takers" by virtue of their regular illicit drug use. In order to better understand the influence of rash-spontaneous impulsivity and conscientiousness in general risk-taking behaviour such as unsafe sex and drug driving, future research could compare the differences between these personality factors in groups of risk-takers (i.e., REU) versus groups of non-risk takers, such as a comparison group of drug naïve persons or a community based sample.

Future research measuring both factors of Dawe and Loxton's (2004) two factor model of impulsivity would be useful to gain a better understanding of the two proposed facets of impulsivity, and how both of these relate to risk-taking behaviours in a sample of REU, who collectively as a group may already be considered 'risky.' Given that current findings found Intensity on a whole to be a more significant factor than Novelty, and considering the inverse relationship between Intensity and Novelty

for the party drug driving risk category, future research needs to carefully consider how rash-spontaneous impulsivity is measured based on theoretical underpinnings, as results appear to support there are many facets of the sensation seeking / impulsivity construct. Additionally, given the paucity of existing literature, more research regarding the influence of conscientiousness on risk-taking behaviours in drug using populations is required in order to better understand these relationships.

Chapter 11: Study 2 Research Aims and Rationale

The second part of this thesis, Study 2, followed on from the results obtained in Study 1 in an effort to further investigate the ability of rash-spontaneous impulsivity and conscientiousness to predict engagement in risk-taking behaviours in a larger, online sample of REU. Given the sensitive nature of the questions included in the survey, and the potential for participants to answer in a socially desirable manner, a web-based design was employed to ensure all participants complete anonymity.

In order to fully test Dawe and Loxton's (2004) two-factor conceptualisation of impulsivity, Study 2 measured and explored the predictive utility of the second proposed factor of impulsivity, reward sensitivity, in addition to rash-spontaneous impulsivity. In an effort to obtain a better conceptual match of Dawe and Loxton's (2004) rash-spontaneous construct, Study 2 used a different measure of rash-spontaneous impulsivity that provided a better fit conceptually. In an effort to clarify the relationship of conscientiousness on risk-taking behaviour in REU, Study 2 retained the existing conscientiousness measure from Study 1.

Additionally, Study 2 measured and controlled for the sexual and driving attitudes of REU. The reasons for this were twofold; first, to add to existing knowledge regarding the role of attitudes in predicting engagement in risk-taking behaviour in a sample of REU, and secondly, to control for their effects. It is known that attitudes typically influence behaviour; therefore, in order to examine how well personality factors perform as predictor variables for risk-taking behaviours in REU,

Study 2 controlled for attitudinal variables. Research regarding the role of attitudes is described in detail in the following section.

Furthermore, in relation to risk-taking behaviours, Study 2 narrowed its approach slightly from Study 1, and only included measures of sexual, drug driving, binge, overdose and injecting risk-taking behaviours. These variables were viewed on a continuum basis (i.e., frequency of involvement in risk-taking behaviour), rather than the categorical basis used in Study 1, with the exception of injecting risk, which was viewed categorically due to the low rate of engagement in such behaviour among ecstasy users (Dunn, Day, Bruno, Degenhardt & Campbell, 2010).

Additionally, whereas Study 1 focused solely on risk-taking behaviours evident in REU, Study 2 also measured harm reduction practices employed by REU. REU's engagement in harm reduction strategies was measured to add to the current small body of research knowledge in this area, and in an exploratory effort to examine relations between personality factors and engagement in harm reduction practices in a sample of REU. Previous research regarding harm reduction practices utilised by REU is described in the following section.

Reward Sensitivity, Substance Use and Risk-Taking

As stated in the literature review, the proposed second trait of impulsivity, reward sensitivity, refers to individual differences in attending to and approaching appetitive stimuli; i.e., having a purposeful drive to obtain rewarding stimuli. The underlying motivational system reflects Gray's BAS dimension, in particular BAS-

Drive and BAS-Reward Responsiveness. On a neurophysiological level, individual differences in reward sensitivity are related to the functioning of the mesolimbic dopamine system. As stated previously, the mesolimbic dopamine pathway is critical in that it underlies the positively reinforcing effects of natural reinforcers such as food and sex, as well as drugs of abuse. Essentially, individuals with a high BAS sensitivity are more prone to engage in approach behaviour and experience positive affect in situations with cues for reward (Dawe & Loxton, 2004).

There is a lack of research regarding the direct role of reward sensitivity in substance use and risk-taking behaviours, as the majority of studies on illicit drug use have focused on measures of rash-spontaneous impulsivity (Loxton, Nguyen, Casey & Dawe, 2008). However, in the few studies that have measured reward sensitivity, preliminary results indicate that individuals high in reward sensitivity are at higher risk of substance abuse (Genovese & Wallace, 2007; Johnson, Turner & Iwata, 2003; Knyazev, Slobodskaya, Kharchenko & Wilson, 2004) and alcohol abuse diagnoses / alcohol misuse (Johnson, Turner & Iwata, 2003; Loxton & Dawe, 2001). Reward sensitivity has been shown to be directly associated with dysfunctional eating and drinking (Loxton & Dawe, 2006 & 2001) as well as problem gambling (O'Connor, Stewart & Watt, 2009; Loxton, Nguyen, Casey & Dawe, 2008). However, contrary to expectations and other research findings, Voigt, Dillard, Braddock, Anderson, Sopory and Stephenson (2009) found that reward sensitivity served as a protective force against engagement in risky health behaviours such as sexual practices, alcohol consumption, drug and tobacco use, car safety, inactivity and poor diet.

It is also thought that reward sensitivity may play a role in cued-cravings and motivation to use drugs (Dawe & Loxton, 2004). Franken (2002) compared results on the BIS / BAS scales with cue elicited alcohol cravings in a sample of men and women from an inpatient alcoholism treatment program as well as the general population. Results indicated that people with high BAS-Drive scores (i.e., high levels of reward sensitivity) experienced significantly more strong desires, intentions to drink alcohol and negative reinforcement craving during exposure to alcohol related cues than did people with low BAS-Drive scores. Franken concluded his findings supported Gray's personality theory (Gray, 1970; Gray & McNaughton, 2000) that high BAS activity is positively correlated with increased desire for drinking alcohol.

In summary, there is a lack of research regarding the direct role of reward sensitivity in substance use and risk-taking behaviours; however, research to date has indicated a direct relationship between reward sensitivity and substance and alcohol use / misuse, problem gambling and dysfunctional eating. Further research is needed in this area to expand on these preliminary findings.

The Role of Attitudes in Risk-Taking Behaviour

Attitudes are "tendencies to evaluate an entity with some degree of favour or disfavour, ordinarily expressed in cognitive, affective and behavioural responses" (Eagly & Chaiken, 1993). The utility of the attitude concept derives partly from its assumed ability to guide, influence, direct, shape and predict actual behaviour (Eagly & Chaiken, 1993). In general, previous research has shown that attitudes

significantly and substantially predict future behaviour in the general population (e.g., Kraus, 1995; Howarth, 1988). Therefore, in relation to the current research, in an attempt to understand why some REU engage in risky behaviours and others do not, in addition to personality, it is important to consider the influence of attitudes; particularly as previous research has shown attitudes often account for a large amount of the variance in predicting behaviour.

Health Psychology Models of Risk-Taking Behaviour

As stated previously, health models have explanatory power in relation to explaining health risk-taking behaviour, but they are not the models of focus and therefore are beyond the scope of this review. However, in an effort to promote understanding of reasons underlying the inclusion of attitudinal measures, two of these models will be explained briefly.

The theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein, 1980 & 1982) proposed there are two attitudes that combine to produce what is known as an intention, and this intention then leads to the performance or nonperformance of the behaviour in question. First, an individual's attitude regarding the behaviour reflects their judgement of whether or not the behaviour is a good thing to do. This judgement is often based on the individual's beliefs about the likely outcome of the behaviour, and whether the outcome would be rewarding. Secondly, an individual's attitude about a subjective norm reflects the impact of social pressure or influence regarding the behaviour's acceptability or appropriateness. This judgement is based on the individual's beliefs regarding others' opinions about the behaviour, and their

motivation to comply with those opinions. Thus, attitudes regarding a behaviour impacts upon our intentions, which then either leads to engagement or non-engagement in the behaviour (Caltabiano, Sarafino, Byrne & Martin, 2002).

The theory of reasoned action was revised to include the notion of perceived behavioural control, thus resulting in the theory of planned behaviour (Ajzen, 1991). The concept of behavioural control (similar to perceived self-efficacy) was introduced to account for behavioural intentions not always predicting actual behaviour, e.g., when the behaviour is not directly in control of the person, or the person perceives no control regarding the behaviour (i.e., lack of self-efficacy) (Caltabiano, Sarafino, Byrne & Martin, 2002). For example, the theory of planned behaviour would propose that people will intend to use condoms if they evaluate condom use positively, if they believe significant others think they should use condoms, and if they feel confident in their ability to use condoms (Heeren, Jemmott, Mandeya & Tyler, 2007).

The Influence of Sexual Attitudes on Sexual Risk-Taking Behaviours

Previous research has indicated that sexual attitudes, as well as other factors, are significant predictors of sexual risk-taking behaviour in general population samples. For example, Heeren, Jemmott, Mandeya and Tyler (2007) found that condom use was significantly predicted by positive condom attitudes, whereby university students who reported a more favourable attitude towards using condoms, more normative support for condom use and greater self-efficacy to use condoms reported using condoms more frequently when they had sexual intercourse.

Similarly, Khumsaen and Gary (2009) found that positive attitudes towards condom use and a higher condom use self-efficacy were significantly related to increased use of condoms in a sample of Thai adolescents. In this study, age and sex were not significant predictors of condom use behaviour. On the contrary, Lou and Chen (2009) found that Taiwanese adolescents' sexual attitudes had no direct effect on the practice of safer sexual behaviour.

In a sample of females aged 18 – 21, Morrison-Beedy, Carey, Feng and Tu (2008) found the frequency of condom protected vaginal sex was predicted by information (better HIV knowledge), motivation (stronger intentions to practice safer sex and more positive attitudes towards condoms), skills (lower perceived difficulty for condom use and for negotiation with a partner), mental health (lower psychological distress), alcohol (no binge drinking, more drinking days) and other drug use (non-use of ecstasy). The frequency of unprotected vaginal sex was predicted by alcohol (fewer drinking days, fewer average number of drinks per drinking day, more binge drinking), other drug use (opiate and ecstasy use) and lower frequency of protected vaginal sex at baseline.

Results from research conducted with high-risk groups have also revealed that sexual attitudes, amongst other factors, are significant predictors of sexual risk-taking behaviour. For example, Robertson and Levin (1999) found that positive attitudes towards condoms and reported use of a condom at first sexual intercourse experience were significant predictors of subsequent condom use in a population of substance abusing juvenile offenders on probation or parole, with females having a more positive attitude about condoms than males. In a population of opiate / cocaine

using adults, Rosengard, Anderson and Stein (2006) found that positive attitudes regarding condoms' effects on pleasure and not feeling embarrassed about negotiating condom use with a partner were associated with greater likelihood of condom use. In a population of injecting drug users, Bogart, Kral, Scott, Anderson, Flynn, Gilbert and Bluthenthal (2005) found that positive attitudes towards condoms were significantly associated with and predicted consistent condom use for vaginal, anal and oral sex in the previous 6 months.

Therefore, previous research conducted in various sample populations demonstrates the predictive relationship between an individual's attitudes towards factors associated with condom use and safer sex, and their engagement in safer sex or risky sexual practices. These studies indicate that although there are other factors implicated in the practice of safer sex or engagement in risky sexual behaviours (e.g., alcohol / drug use, self-efficacy, mental health), attitudes certainly play an important role which should be considered when measuring involvement in sexual risk-taking behaviour.

The Influence of Driving Attitudes on Risky Driving Behaviours

Previous research has shown that driver attitudes, amongst other factors, are associated with and are significant predictors of risky driving behaviour. For example, Whissell and Bigelow (2003) found a significant correlation between speeding attitudes (more permissive) and the number of speeding tickets. In a sample of Norwegian drivers, Iversen and Rundmo (2004) found that attitudes towards traffic safety issues influenced the person's involvement in traffic risk

behaviour, with attitudes regarding rule violations and speeding of particular importance. They also found that variations in attitudes were related to age and sex (younger males held more negative attitudes). Similarly, in a sample of Turkish drivers, Yilmaz and Çelĭk (2004) found that risky driver attitudes, less obedience to speed rules, risk-taking tendency in traffic and caring (less) about traffic accidents explained 71% of the variance in risky driver behaviour. Specifically, people whose attitudes reflected a greater obedience to speed rules were less likely to engage in risky driver behaviour.

In a recent study, Nordfjærn, Jørgensen and Rundmo (2010) investigated the relationship between demographic characteristics (age, sex, education), personality factors (impulsivity, anxiety, normlessness [the belief that social deviance may serve as a utility to obtain goals]), driver attitudes (rule violations and speeding, careless driving of others, drinking and driving) and driver behaviour (rule violation / speeding, reckless / fun riding, not using seat belts, cautious / watchful driving, drinking and driving, attentiveness to children in traffic, obeying speed limits). In a predictive model, a considerable amount of the variance in driver attitudes (56%), and a moderate amount of the variance in driver behaviour (30%) were explained by personality factors. There was a strong positive relationship ($\beta = 0.75$) between driver attitudes and driver behaviour. Of the demographic variables, sex had the strongest direct effect on driver attitudes, in that males had less ideal driver attitudes than females. Increased age was a predictor of more ideal attitudes to driving and cautious behaviour in traffic. With regard to personality factors, normlessness had the strongest relationship with driver attitudes, indicating that lower levels of this trait predicted more favourable attitudes towards traffic safety. Normlessness also

predicted less ideal (i.e., riskier) driver behaviour. Anxiety and sensation seeking showed only weak relations to driver attitudes and behaviour.

Therefore, previous research has demonstrated that driving attitudes are important predictors of driver risk behaviour, with attitudes towards rule violations and speeding of particular importance. These studies also demonstrate that in general, younger males have less ideal attitudes and may be more involved in risky driving behaviour. However, these studies have been conducted in the general population as opposed to substance using populations, and no studies measuring drug driving were found. Therefore, in relation to the present research, previous findings will attempt to be extended to a population of REU and behaviourally, drug driving. In an attempt to understand the role personality factors have on drug driving behaviours in REU, it is important to also consider driver attitudes, as they potentially may contribute to drug driving behaviour.

Harm Reduction Practices in Ecstasy Users

As stated previously, the prevalence of people using ecstasy in Australia is rising (AIHW, 2008), and the adverse effect of MDMA on various brain systems, particularly the serotonergic system, have been noted. There is also concern in that ecstasy users are typically polydrug users (Akram & Galt, 1999; Allott & Redman, 2006; Boys, Lenton & Norcross, 1997; Topp, Hando & Dillon, 1999; Winstock, Griffiths & Stewart, 2001), and due to little research in this area, the possible effects of drug interactions in combination with ecstasy have not been determined (Allott & Redman, 2006).

It is known that MDMA use can bring about a range of negative physical side-effects, both whilst under the influence of the drug and during the 'comedown' period, such as weight loss, sweating, dry mouth, insomnia, headaches, nausea, fatigue, difficulty concentrating, loss of appetite, feelings of dissociation, tachycardia, tremors and jaw-clenching. In the days following ecstasy use, users are likely to have lowered levels of serotonin, which is associated with a variety of problems such as depression, anxiety and sleeping difficulties. Other subacute symptoms include agitation, decreased alertness, fatigue, decreased appetite, muscle aches and tight jaw (Baggott, 2002; Copeland, Dillon & Gascoigne, 2004).

Previous research is mixed in that some studies have concluded that ecstasy users are unaware of the risks associated with using MDMA, or that they perceive ecstasy is a relatively safe drug, whilst other studies have indicated that ecstasy users are aware of the risks associated with MDMA use, and want more information about the risks of using and how they can minimise such effects (e.g., Akram & Galt, 1999; Topp, Hando & Dillon, 1999).

Harm reduction is defined as the "use of strategies to prevent or reduce harmful consequences associated with illicit drug use" (Allott & Redman, 2006). Harm can include a range of physical, psychosocial and / or financial problems associated with drug use. Therefore, the goal of harm reduction is to reduce or minimise any harm that may occur as a consequence of drug use. Drug users who are provided with accurate information are then enabled to make a responsible, informed decision whereby they can reduce the risks associated with their drug use (Cohen, 1994).

Previous research has shown that ecstasy users employ varied strategies in an effort to minimise related problems due to ecstasy use, such as reducing the amount of ecstasy used (Baggott, 2002; Hansen, Maycock & Lower, 2001; Topp, Hando & Dillon, 1999), testing ecstasy pills prior to consumption (de Wijngaart, Braam, de Bruin, Fris, Maalsté & Verbraeck,1999; Winstock, Wolff & Ramsey, 2001), managing 'comedown' symptoms by taking other illicit or prescription drugs (Boys, Lenton & Norcross, 1997; Hansen, Maycock & Lower, 2001), and attempting to avoid serotonergic neurotoxicity by taking antioxidants and / or antidepressants (Baggott, 2002; Copeland, Dillon & Gascoigne, 2004).

Akram and Galt (1999) conducted a survey among ecstasy and related drug users in the UK in an attempt to ascertain the prevalence and types of harm reduction strategies employed, if any. Of the 125 users sampled, 82% reported employing one or more harm reduction strategy. Drinking water to avoid heat stroke was the most commonly used strategy (90%), followed by chilling out (i.e., taking a break from dancing and not allowing the body to become overheated or exhausted) (82%). The authors found that females were significantly more likely than males to take harm reducing steps.

Allott and Redman (2006) administered an anonymous questionnaire to 116 Australian ecstasy users in an exploratory effort to describe the prevalence and nature of harm reduction practices employed. Results indicated that just over half the sample had altered their use of ecstasy in response to a dislike of using, most commonly being to decrease the frequency with which they used ecstasy, followed by decreasing the amount of ecstasy used per occasion, ceasing use and obtaining

ecstasy pills from a reliable source. Results also indicated that every ecstasy user surveyed employed at least one strategy to avoid negative ecstasy side effects, most commonly drinking water, followed by limiting ecstasy use, chilling out, maintaining a healthy lifestyle and taking vitamins or other natural products. Users reported drinking water, limiting ecstasy use, taking vitamins or natural products and maintaining a healthy lifestyle as strategies to avoid the ecstasy 'comedown.' With regards to strategies employed with the aim of reducing brain damage or neurotoxicity, most commonly used was limiting ecstasy use, drinking water, taking vitamins or natural products and maintaining a healthy lifestyle. Interestingly, approximately one third of the sample reported using other illicit substances to avoid ecstasy's negative side effects and the 'comedown' associated with use.

Using a pill testing kit is another strategy employed by some REU in an effort to reduce harm. As stated previously, tablets sold as ecstasy may or may not contain MDMA, and they may well contain a variety of other substances. As Baggott (2002) states, "quality control of ecstasy has become an important issue to ecstasy users." In Allott and Redman's (2006) study, 40% of the sample reported having tested ecstasy pills for the presence of MDMA. The aim of pill testing is to provide users with information regarding the composition of purported MDMA tablets, as well as to bring ecstasy users into contact with public health organisations that offer testing, in an effort to facilitate information exchange between users and monitoring authorities (Baggott, 2002; Winstock, Wolff & Ramsey, 2001).

However, the validity and reliability of pill testing methods has been questioned (e.g., Winstock, Wolff & Ramsey, 2001), due to varying levels of test

sophistication. Winstock, Wolff and Ramsey (2001) argue against the usefulness of pill testing. They argue that some pill testing methods give no indication of some harmful substances that may be present, that pill testing cannot confirm what the true psychoactive effect of the tablet may be and that pill testing gives no information regarding the strength of the tablet. Additionally, they argue that users may be given false reassurance if pill testing identifies MDMA, which users may then falsely misinterpret to mean the tablet is safe to take.

Another type of harm reduction method is known as pre-loading and post-loading, defined as the use of pharmaceuticals and / or natural products prior and subsequent to ecstasy use to reduce any acute and / or longer-term adverse effects associated with use (Allott & Redman, 2006). Studies have indicated the use of selective serotonin reuptake inhibitors (SSRIs), the serotonin precursor 5-hydroxy tryptophan (5-HTP) and the antioxidant Vitamin C are often used in an effort to reduce ecstasy-related neurotoxicity (McCann & Ricaurte, 1993; Oesterheld, Armstrong & Cozza., 2004; Tong & Boyer, 2002; Weir, 2000).

Allott and Redman (2006) also measured the prevalence and nature of pre- and post-loading practices in their sample of ecstasy users. Of the 66% of ecstasy users that had heard of the practice, 41% engaged in pre-loading and 47% in post-loading. Users reported using multivitamins, 5-HTP, magnesium and fruit / fruit juice most commonly to pre-load, whilst using 5-HTP, multivitamins and fruit / fruit juice most commonly to post-load. The most common reasons users gave for pre- and post-loading was to decrease the 'comedown,' followed by attempting to reduce brain damage or neurotoxicity. One-third of pre-loaders did so every time they used

ecstasy, while nearly half of post-loaders did so every time they used ecstasy. The authors also explored factors that differentiated between ecstasy users who pre- and / or post-loaded from those who did not. Analyses revealed that being younger and having used ecstasy more than 50 times was significantly associated with pre-loading, whilst using ecstasy more than 50 times and using ecstasy on a monthly or more often basis was significantly associated with post-loading. Unlike Akram and Galt (1999), Allott and Redman (2006) did not find any sex differences in the overall use of harm reduction strategies.

It is unknown if pre- and post-loading practices are actually effective in reducing the short and / or long-term adverse effects or neurotoxicity associated with ecstasy use (Oesterheld, Armstrong & Cozza, 2004; Allott & Redman, 2006). However, regardless of their effectiveness, most substances used for pre- and post-loading (e.g., vitamins, minerals, fruit, fruit juice, milk and turkey) are unlikely to cause harm. Nonetheless, there is concern that REU engage in such practices due to the belief that they are protecting themselves, and as a result, maintain or increase their current level of ecstasy use, when in fact, there is a paucity of human research regarding the efficacy of such practices (Allot & Redman, 2006).

There is also cause for concern that some REU use ecstasy and other serotonin-enhancing substances, such as 5-HTP, selective serotonin reuptake inhibitors (SSRIs) or monoamine oxidase inhibitors (MAOIs) anti-depressant medication, lysergic acid diethylamide (LSD) and products with pseudoephedrine, concomitantly. For example, REU have reported using anti-depressant medications in an attempt to counteract any potential damage that may result from depleted

serotonin levels due to ecstasy use. Using ecstasy and other serotonin-enhancing substances in tandem could potentially result in dangerously high levels of serotonin, and bring about the potentially fatal condition known as 'serotonin syndrome' (Sternbach, 1991). This syndrome can occur after ingestion of two or more serotonin-enhancing substances, and causes symptoms such as euphoria, drowsiness, sustained rapid eye movement, overreaction of the reflexes, rapid muscle contraction and relaxation in the ankle causing abnormal movements of the foot, clumsiness, restlessness, feeling drunk and dizzy, muscle contraction and relaxation in the jaw, sweating, intoxication, muscle twitching, rigidity, high body temperature, frequent mental status changes, shivering, diarrhoea, loss of consciousness and death (Copeland, Dillon & Gascoigne, 2004; Sternbach, 1991). Although the prevalence of serotonin syndrome is thought to be low, it is still a risk and it is important that ecstasy users who use other serotonin-enhancing substances are well informed of the risks involved.

In summary, many REU appear to practice a wide range of harm reduction practices, despite their effectiveness being clinically undetermined. However, there is a paucity of research in this area, and further information regarding the types of practices being employed by ecstasy users and the reasons behind this is imperative. Further research regarding drug interactions is also warranted, as is research regarding the clinical effectiveness of such harm reduction practices. It would be ideal to provide REU with research-validated information regarding the efficacy of harm reduction practices, so that REU could then make educated decisions regarding their ecstasy use and the use of harm reduction strategies to minimise risk.

In relation to Study 2, harm reduction practices employed by REU were explored in order to add to the existing small body of research knowledge. Additionally, relationships between personality factors and harm reduction strategies were examined to determine if rash-spontaneous impulsivity, reward sensitivity and / or conscientiousness are able to successfully predict REU who engage in harm reduction behaviour versus those who do not. Identification of the differentiating factors between REU who engage in harm reduction behaviour versus those who do not could prove particularly important in the development of appropriate health intervention and treatment programs. For example, if research establishes that low rash-spontaneous impulsivity or high conscientiousness significantly predicts engagement in harm reduction practices, successful programs may focus on helping such REU plan their ecstasy use, encourage the use of home pill testing kits and / or provide pamphlet or web-based information, etc. If the same were true, on the contrary, targeting REU who are non harm reductionists (i.e., those higher in rash-spontaneous impulsivity or lower in conscientiousness) also becomes a priority for intervention programs, so as to encourage as many REU as possible to engage in some type of harm reduction behaviour. Such harm reduction programs targeting this sub-population may tend to focus on reaching users and providing information at clubs / dance sites, such as encouraging the consumption of fewer ecstasy tablets, encouraging non-mixing of ecstasy with other drugs, offering free bottles of water and / or free onsite pill testing.

Chapter 12: Study 2 Hypotheses

In light of previous research and findings from Study 1, the demographic factors of sex and age (i.e. being male and younger) were expected to predict engagement in risk-taking behaviours. Given that previous research findings regarding the relationship between age, sex and engagement in harm reduction behaviour is mixed, these relationships were conducted in an exploratory manner with no conclusive expectations held.

With regard to attitudes, it was expected that less positive attitudes regarding safer sexual practices and driving would be predictive of REU who engaged in sexual risk behaviour and drug driving, or that more positive attitudes towards these behaviours would result in less risk-taking behaviour. For example, individuals whose attitudes towards the practice of safer sex were considered risky or less safe may engage in sexual risk-taking behaviour more often than an individual who highly endorsed safe, non-risky attitudes towards the practice of safer sex. Or, individuals who endorsed rules-based, safe, non-risky driving attitudes may engage in risky driving behaviours less often than those whose attitudes towards driving were considered risky or less safe.

In relation to personality factors, it was expected that the rash-spontaneous factor of impulsivity would be predictive of REU who engage in all domains of risk-taking behaviours. Although entirely exploratory, rash-spontaneous impulsivity was expected to either play a negative role with regard to predicting the use of harm reduction strategies, or be unrelated. Despite the lack of significant relations in

Study 1, based on the large body of previous research findings, the personality factor of conscientiousness was expected to be predictive of REU who engage in risk-taking behaviours in a negative fashion, and predictive of REU who engage in harm reduction behaviours in a positive fashion. Given the paucity of available research regarding the role of reward sensitivity, exploration of this second factor of impulsivity was purely exploratory; therefore, no conclusive expectations were held regarding its predictive abilities.

Chapter 13: Study 2 Method

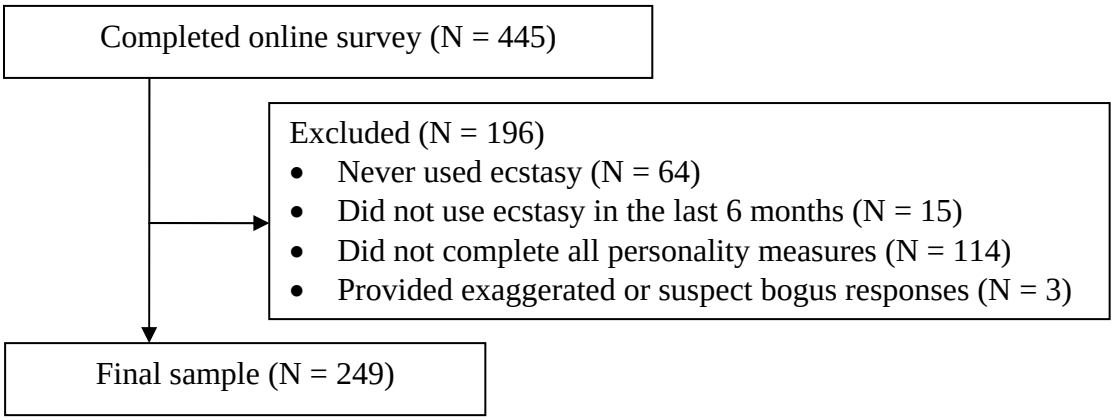
Participants

Participants were 445 self-identified frequent ecstasy users who participated in the online survey or pencil / paper survey between May and November 2009 (99.8% participated online). Participation was open to anyone who self-identified using ecstasy in the preceding 6 months.

All surveys were systematically checked for validity in relation to stringent exclusion criteria. Firstly, the surveys of participants who reported they had never used ecstasy or had not used ecstasy in the last 6 months were discarded. This criterion was of priority as the study aimed to target people who self-reported regular ecstasy use in the preceding 6 months. Secondly, the surveys of participants who chose not to complete all of the personality measures were eliminated. Given the rationale and aims of this study, completion of all personality measures was a core component of data analyses and the potential clinical application of the results. Therefore, participants with missing personality data were removed so that all analyses reported in Study 2 related to the same, consistent group of REU. Lastly, the remaining surveys were checked in relation to suspect bogus / exaggerated reporting. Given the survey was hosted online, there was a risk that some participants may have given false or exaggerated responses. Suspected cases were removed from the data set for validity reasons. Following this process, a total of 196 surveys were removed from the data set, resulting in a total of 249 participants (Figure 3).

Figure 3

Participant flow diagram of exclusion criteria



As the survey was hosted online, participants resided throughout the world. The majority of respondents lived in the United States of America (38.2%), followed by Australia (27.3%), New Zealand (8.8%), the United Kingdom (8.0%) and Canada (6.4%). Participants from Sweden, Spain, Denmark, Ireland, France, Norway, Belgium, Germany and the Netherlands collectively accounted for 3.6% of the sample. Other demographic characteristics of the sample are presented in Table 23. Compared to the Study 1 sample, participants in this online sample were younger (22.9 versus 24.3 years of age) and had a higher proportion of male respondents (62.7% versus 56.5%).

Table 23

Demographic characteristics of participants

N = 249	%
Mean age	22.9 (*SD* = 6.62)
Male	62.7
Employed full time	27.3
Full-time student	20.9
Employed part-time / casual	9.6
Unemployed	7.2
Heterosexual	82.7
Gay male	2.4
Lesbian	2.0
Bi-sexual	12.0

Ecstasy was the main drug of choice for 39.8% of the sample, followed by 18.5% preferring cannabis, 12.4% preferring LSD and 8.8% preferring alcohol. The majority of the sample had never injected any drug (82.7%). The mean age of first ecstasy use was 19.3 years (*SD* = 4.60), with the mean number of ecstasy tablets usually taken per session was 2.7 (*SD* = 1.83). The overwhelming majority of the sample ingested ecstasy orally (92.4%), whilst 6.8% reported their main route of ecstasy administration was snorting.

Table 24 details the sample's patterns of lifetime and recent use of ecstasy and other drugs. The patterns of use of this online sample were comparable to the Study 1 sample for LSD, cannabis, alcohol and mushrooms. However, participants

in the current sample reported higher lifetime and recent use of cocaine, ketamine and GHB, whilst reporting less overall and recent use of methamphetamine.

Table 24

Participant's patterns of lifetime and recent use of ecstasy and other drugs

			Frequency of use in the last 6 months (among those using the drug in this period)				
Drug	*Ever used (%)*	*Used last 6 months (%)*	*Less than monthly (%)*	*Monthly (%)*	*Fortnightly (%)*	*Weekly (%)*	*More than once a week (%)*
Ecstasy	100.0	100.0	47.0	30.5	10.4	7.6	2.8
Alcohol	97.6	92.4	10.2	11.6	15.1	34.2	28.9
Cannabis	95.6	83.5	24.3	13.9	8.4	17.3	36.1
Cocaine	62.7	41.4	73.0	11.0	8.0	6.0	2.0
Mushrooms	60.2	30.9	76.3	10.5	11.8	1.3	0.0
LSD	57.0	31.7	62.3	23.4	10.4	3.9	0.0
Ketamine	47.8	23.3	76.8	8.9	3.6	3.6	7.1
Methamphetamine (powder, base, crystal)	47.4	28.9	69.4	13.9	5.6	2.8	8.3
GHB	20.1	8.4	57.1	9.5	9.5	14.3	9.5

Procedure

Participants were recruited through posters distributed in the greater Hobart area (cafes, university and vocational education providers). Posters were also mailed to all Australian university psychology departments as well as approximately 70 Technical and Further Education (TAFE) providers across Australia. Internet forums such as www.bluelight.ru, www.freshdisko.com, www.tripme.co.nz, www.drugs-forum.com, www.drugsandbooze.com, and www.legalhighsforum.com were also used for recruitment purposes.

Interested participants navigated to the online survey webpage and completed the study at a time convenient to themselves. Prior to commencing the online survey, participants were presented with an information sheet, to which they had to give consent in order for the online survey to proceed. It was estimated that participation would take most participants approximately 30 minutes, and participants were advised that all questions were optional. At the end of the survey, participants were given the opportunity to enter a prize draw to win one of three $100 www.amazon.com gift vouchers to thank them for their participation.

Materials

Online Questionnaire

The online questionnaire was a self-report survey that assessed several key areas: demographic information, patterns of ecstasy and related drug (ERD) use, health and harm reduction behaviours, driving practices, sexual experiences and personality. For consistency purposes, items used in the online questionnaire were

based on items from the PDI questionnaire used in Study 1 (Matthews & Bruno, 2006). A copy of the online questionnaire may be found in Appendix B.

Demographic Information and Patterns of ERD Use

As in Study 1 and consistent with the PDI questionnaire (Matthews & Bruno, 2006), participants were asked to indicate their sex, age, country of residence, employment status and sexual identity. Participants were also asked to indicate the age at which they first tried ecstasy, their usual route of ecstasy administration, their main drug of choice (i.e., favourite or preferred drug) and the nature / frequency of their ERD use in the past 6 months.

Health and Harm Reduction Behaviours

Participants were asked to give information regarding overdose and binge use (defined as use for more than 48 hours without sleep) of stimulant drugs, as well as their use of ecstasy combined with alcohol and / or methamphetamine. These items were consistent with items from the PDI questionnaire used in Study 1 (Matthews & Bruno, 2006). Participants were also asked about a variety of harm reduction behaviours, such as finding out the content / purity of drugs before taking them, using pill testing kits, the practice of preloading and postloading, as well as other strategies used to minimise the comedown of ecstasy, and / or strategies used to reduce the longer-term negative side effects of using ecstasy. Harm reduction items were again based on selected items from the PDI Questionnaire (Matthews & Bruno,

2006), as well as questions used in Allott and Redman's (2006) study regarding harm reduction practices employed by a sample of Australian ecstasy users.

Driving Practices

Participants that indicated they had driven a car in the previous 6 months were asked about driving under the influence of alcohol and illicit drugs, and the impact they felt this had on their driving ability. These items were consistent with items from the PDI Questionnaire (Matthews & Bruno, 2006) used in Study 1.

Participants were also asked to answer questions regarding their attitudes towards risk-taking whilst driving. Ulleberg and Rundmo (2002) derived a 60-item (unnamed) multidimensional scale by a series of factor analyses, combining items from the Young Driver Attitude Scale (YDAS; Malfetti, Rose, DeKorp & Basch, 1989), driving attitude items based on studies by Rundmo (1998, 1996 & 1992) and self-reported acts of risk-taking whilst driving (Rundmo, 1996; Rundmo & Ulleberg, 2000). The final 60-item scale consisted of 11 attitude subscales: riding with an unsafe driver, speeding, concern about hurting others, drinking and driving, showing off skills to others, traffic flow versus rule obedience, joyriding, dare to speak up to an unsafe driver, risk for accidents, fatalism and violation of traffic rules, as well as a behavioural items scale. Example items include, *'It is better to drive smoothly than to always follow the traffic rules'*, and *'I think it's okay to speed if traffic conditions allow you to do so.'* Ulleberg and Rundmo (2002) report the scalability, homogeneity of subscale items, and discriminant and content validity of the final scale were all satisfactory.

In Ulleberg and Rundmo's (2002) study, all 11 attitude subscales significantly correlated with self-reported driving risk-taking behaviour and accident frequency. In relation to driving risk-taking behaviour, the strongest correlated subscales were speeding, traffic flow versus rule obedience and joyriding. Furthermore, Ulleberg and Rundmo's (2002) multiple regression analyses revealed that 10 of the 11 attitude subscales were significant predictors of self-reported driving risk-taking behaviours, with the speeding subscale the best predictor.

In the current study, participants were asked to answer a total of 45 questions representing 9 of the 11 attitude subscales as well as the behavioural items scale. The attitude subscales riding with an unsafe driver and fatalism were not included due to the nature / wording of these questions, and because both subscales were amongst the weakest predictors of driving risk-taking behaviour. For each attitude subscale question, participants were asked to rate their opinion about each statement on a 5-point Likert scale, ranging from *'strongly agree'* to *'strongly disagree'*. For the behavioural scale, participants were asked to indicate how often they engaged in various driving risk-taking behaviours on a 5-point Likert scale ranging from *'never'* to *'very often'*. Scores were appropriately summed so that the higher the score, the more the participant endorsed driving risk-taking attitudes and / or behaviours.

Sexual Experiences

Participants were asked about their participation in sexual health check-ups and if they had ever been diagnosed with a sexually transmitted infection. Participants were also asked to indicate how many sexual partners they had in the

past 6 months, if they had sex with a casual partner in the previous 6 months, if they had sex whilst using ERD, and their frequency of protection use (e.g., condoms). These questions were consistent with questions from the PDI Questionnaire (Matthews & Bruno, 2006) used in Study 1.

Participants were also asked to answer questions regarding their sexual attitudes. DeHart and Birkimer (1997) derived a 38-item *Sexual Risks Scale*, which is comprised of subscales measuring attitudes about safer sex, normative beliefs, intention to practice safer sex, expectations about the feasibility of safer sexual activity, perceived susceptibility to HIV/AIDS and substance use. DeHart and Birkimer (1997) report the overall scale and individual subscales are all characterised by internal reliability and both construct and predictive validity, and that subscales are concise and reliable enough to use independently or in conjunction with one another. Additionally, the wording used in this scale is reported to be broadly applicable with regards to gender, sexual orientation and sexual experience (DeHart & Birkimer, 1997).

In the current study, participants were asked to answer 26 questions representing 4 of the 6 subscales from the *Sexual Risks Scale.* The intention to try to practice safer sex and the expectations about the feasibility of safer sexual activity subscales were not included, as the inclusion of these 2 subscales in the overall scale was exploratory, and the addition of these 2 subscales did not add accuracy to actual sexual risk prediction (DeHart & Birkimer, 1997). Participants were asked to rate their opinion about each statement on a 5-point Likert scale, ranging from *'almost never'* to *'almost always'*. Example items include *'Condoms ruin the natural sex*

act', and *'The proper use of a condom could enhance sexual pleasure.'* Scores were appropriately summed so that the higher the score, the more the participant endorsed sexual risk-taking attitudes.

Personality

The online survey concluded with 3 measures of personality, as well as a lie scale intended for validity purposes (each described below).

International Personality Item Pool Responsibility Scale (IPIP: Re)

As stated previously, the International Personality Item Pool (IPIP) is a web-based, scientific collaboratory that provides access to measures of personality and individual differences in the public domain. Consistent with Study 1, the online survey included the IPIP scale of responsibility (Goldberg et al., 2006), which is based on the responsibility subscale of the California Psychological Inventory (CPI) (Gough & Bradley, 1996). The domain of responsibility, as discussed previously, is a facet of the trait conscientiousness. In brief, the IPIP: Re scale consists of 10 statements that describe people's behaviour. Example items included *'I return extra change with a cashier makes a mistake'* and *'I like to be of service to others.'* Participants were asked to use a 5-point rating scale to indicate how accurately each statement described them. Higher scores are indicative of higher levels of conscientiousness related behaviour, on a continuum rather than categorical basis. The reliability of the IPIP: Re scale is moderate ($\alpha = .66$) (Goldberg et al., 2006).

BIS / BAS Scales

The BIS / BAS scales (Carver & White, 1994) were constructed to assess dispositional behavioural inhibition (BIS) and behavioural approach (BAS) sensitivities, based on Gray's (1981, 1982) previously discussed theory that these two general motivational systems underlie human behaviour and affect. The BIS / BAS scales are a self-report instrument including a total of 24 items. Four of these items were "fillers" and were not included in the online survey as they did not contribute to the participant's score. For each of the 20 statements, participants were asked to indicate the degree to which they agreed or disagreed using a four-point Likert scale ranging from *'very true for me'* to *'very false for me.'* Example items included *'I go out of my way to get things I want,' 'I often act on the spur of the moment,'* and *'I worry about making mistakes.'*

The scales provided a single score for BIS and three subscale scores for BAS: (1) BAS reward responsiveness, which includes items that measure anticipation and positive response towards reward, (2) BAS drive, which includes items that tap persistence in obtaining desired goals, and (3) BAS fun seeking, which includes statements that are indicative of a willingness to seek out and spontaneously approach potentially rewarding experiences (Carver & White, 1994). The BAS drive subscale was of particular interest to the current study as it provided the best conceptual measure of reward sensitivity.

Carver and White (1994) indicate the internal reliability of each scale as moderate / good (BAS drive $\alpha = .76$). Data regarding convergent and discriminant validity indicate that the BIS and BAS scales are related to, but also distinguishable

from alternative measures of similar constructs and measures of important alternative constructs (Carver & White, 1994). Carver and White (1994) conclude that collectively their studies provide support for the idea that the BIS / BAS scales validly reflect individual differences in the sensitivity of the presumed underlying neurophysiological regulatory systems.

Barratt Impulsiveness Scale (BIS-11)

The Barratt Impulsiveness Scale, Version 11 (BIS-11; Patton, Stanford & Barratt, 1995) is a 30-item self-report questionnaire designed to assess general impulsiveness, taking into account the multi-factorial nature of the construct. The structure of the BIS-11 allows for the assessment of six first-order factors of impulsiveness (attention, motor, self-control, cognitive complexity, perseverance, cognitive instability) and three second-order factors of impulsiveness (attentional impulsiveness [attention and cognitive instability], motor impulsiveness [motor and perseverance] and nonplanning impulsiveness [self-control and cognitive complexity]). Patton and colleagues (1995) report internal consistency coefficients ranging from 0.79 to 0.83 for various populations, including undergraduates, substance abuse patients, general psychiatric patients and prison inmates.

In the online survey, participants were asked to read each statement and indicate on a 4-point Likert scale how well the statement described them, ranging from *'rarely / never'* to *'almost always / always'*. Example items included *'I do things without thinking,' 'I buy things on impulse,'* and *'I am future oriented.'* A

total score was obtained by appropriate summation, with a higher score indicative of a higher level of impulsiveness, on a continuum rather than categorical basis.

EPQ-R Short Scale Lie Scale

The Short Lie Scale from the Eysenck Personality Questionnaire Revised (Eysenck & Eysenck, 1991) was also included in the personality section of the online survey. This scale was included with an intention to use this instrument to provide a measure of validity and socially desirable reporting from participants. The Short Lie Scale consisted of 12 questions, which participants were asked to read and to indicate *'yes'* or *'no'* in response to each. Items included questions such as *'Have you ever blamed someone for doing something you really knew was your fault?'* and *'Have you ever said anything bad or nasty about someone?'*

Participants were scored 1 point for each of the questions they answered in a socially biased way. Therefore, a total score of 12 points was possible, with higher scores indicating the participant's tendency to 'fake good' and answer in a socially desirable manner. The Eysenck Personality Scales Manual (Eysenck & Eysenck, 1991) states there is no definitive cut-off score beyond which participants should be eliminated; however, the authors recommend evaluating data given by the top scoring 5%. In the current sample, the top scoring 5% recorded scores of 8 (n = 5), 9 (n = 7) and 10 (n = 1). The survey responses of these participants were evaluated and found to appear reliable and valid; therefore, none of these participants were eliminated from the sample.

Data Analysis: Dependent Variables of Risk-Taking and Harm Reduction

Five domains of risk-taking behaviour (sexual, drug driving, binge, overdose and injecting), as well as a harm reduction domain, were created based on variables within the online questionnaire (each described below). Table 25 details the distributional properties of each dependent variable.

Sexual Risk Category

Participants who indicated they had sex with a casual partner in the previous 6 months (38.2% of the overall sample) were asked to indicate the frequency of which they used protection (e.g., condoms) during those encounters, either while or whilst not using party drugs. Participants chose from 5 responses: *'never', 'rarely', 'sometimes', 'often'* or *'every time.'* Responses were scored so that participants who reported to never use protection with casual partners were given a score of 4, whereas participants reporting to use protection *'every time'* were scored 0. Therefore, the higher the score, the greater the sexual risk.

Drug Driving Risk Category

Participants who indicated they had driven a car in the previous 6 months were asked if they had driven soon after taking illicit drugs in the previous 6 months. Those participants who indicated they had drug driven were asked to indicate the number of times they had drug driven in the previous 6 months. Therefore, a participant's score was indicative of the number of times they drug drove, with higher scores indicating more frequent engagement in drug driving behaviour.

Binge Risk Category

Participants were asked if they used stimulants or related drugs (e.g., ecstasy, amphetamines, cocaine) for more than 48 hours continuously without sleep in the previous 6 months. Participants who indicated yes were then asked to indicate the number of times they had engaged in this behaviour in the previous 6 months. Therefore, a participant's score was indicative of the number of times they used stimulants or related drugs for more than 48 hours without sleep, with higher scores indicating of more frequent engagement in binge risk behaviour.

Overdose Risk Category

As consistent with Study 1, several single variables were considered with regards to determining if the participant was at risk of overdose. Namely, those participants who indicated they had ever accidently overdosed on a stimulant drug, reported to usually (50% or more of the time) drink more than 5 standard drinks of alcohol when using ecstasy, and / or reported to usually (50% or more of the time) use any type of methamphetamine when using ecstasy were considered at risk of overdose. Also, the number of ecstasy tablets the participant reported to usually consume in a typical session was also used as an indicator variable of overdose risk, in that risk of overdose increased with a higher number of tablets typically taken. These variables were combined into a latent measure of overdose risk, the process of which is detailed in the next section.

Injecting Risk Category

Those participants who indicated they had ever injected any drug were deemed to be at injecting risk.

Harm Reduction Category

As previously discussed, there is little research regarding harm reduction practices employed by ecstasy users. Therefore, there is no widely accepted definition or set of criteria that differentiates between ecstasy users who are harm reducing and those who are not. Therefore, this attempt to form an overall harm reduction variable was completely exploratory in nature.

In the current study, the harm reduction variable was viewed on a continuum rather than categorical basis. To describe the extent to which participants were harm reducing, 6 single variables were considered. A sum of the number of potentially 'harm reducing' behaviours that participants endorsed was created from the following: finding out the content and purity of ecstasy tablets before taking them more than 50% of the time, ever pre-load before using ecstasy, ever post-load after using ecstasy, reduce how often they used ecstasy, decrease the amount of ecstasy taken on each occasion, and taking breaks or 'chilling out' when using ecstasy (with an aim to prevent overheating). This yielded a graded 'harm reduction' score ranging from 0 (no strategies employed; not at all harm reducing) to 6 (all strategies employed; very harm reducing).

Table 25

Distributional properties of dependent variables

Dependent Variable	Definition	Possible Range	Observed Range	Mean (*SD)*
Sexual Risk	Frequency of protection use with casual partners in last 6 months (of those who had sex with a casual partner)	0 – 4	0 – 4	1.75 (1.66)
Drug Driving Risk	Number of times drug driven in previous 6 months	0 – 193	0 – 182	6.17 (21.41)
Binge Risk	Number of times used stimulants for more than 48 hours continuously without sleep in last 6 months	0 – 193	0 – 30	1.36 (3.83)
Overdose Risk	Ever overdosed on a stimulant drug, use ecstasy with 5+ standard drinks or methamphetamine, how many tablets taken in a typical session	--	--	--
Injecting Risk	Ever injected any drug	0 – 1	0 – 1	0.16 (0.36)
Harm Reduction	Find out content / purity of ecstasy before taking, ever pre or post load, reduce frequency of ecstasy use, decrease amount of ecstasy taken per session, taking breaks when using ecstasy	0 – 6	0 – 6	3.78 (1.49)

Note. Sexual Risk 0 = used protection 'every time', 4 = used protection 'never'; Injecting Risk 0 = no, 1 = yes; Harm Reduction 0 = no strategies employed, 6 = all strategies employed. -- Rather than observed variables, the latent variable is used for the Overdose Risk category.

Statistical Analyses

Items comprising each domain of interest were initially assessed using Muthén and Muthén's (2009) MPlus statistical modeling program (Version 5.21), with an intention to construct structural equation models using latent variables to hypothesise causal relationships among variables. Hierarchical regression analyses was employed (using IBM SPSS Statistics) to assess the ability of personality measures (rash-spontaneous impulsivity, reward sensitivity and conscientiousness) to predict risk-taking and harm reduction behaviour.

Chapter 14: Study 2 Results

Measurement Models

Items comprising each domain of interest were initially assessed using MPlus (Version 5.21: Muthén & Muthén, 2009) with an intention to conduct structural equation modelling using latent variables. However, initial modelling using MPlus revealed poor measurement models (the fit of the individual items to the latent construct). For example, when using MPlus to test how well individual items on the Barrett Impulsivity Scale (or its subscales) fit together to form an overall construct, analysis revealed poor model fit. These could typically be improved to meet requirements for acceptable model fit by removing multiple items from the scales. Similar results were found in relation to the sexual and driving risk-taking variables, the sexual attitude, reward sensitivity and conscientiousness measures, and the harm reduction construct. However, in relation to the overdose risk-taking construct, MPlus data analysis revealed quite a good model fit.

Despite MPlus analyses indicating that individual items comprising the latent personality constructs failed to meet standards for acceptable fit, this is not an uncommon experience when examining latent structures of scales, and these scales have been used in copious other research paradigms, as detailed in previous sections. Therefore, with a goal of contributing to research knowledge in this area, personality scales and the items comprising them were not altered in an effort to meet criteria for acceptable model fit. Rather, and more consistent with the limited sample size, the modelling approach was changed from structural modelling using latent variables to

hierarchical regression modelling, retaining all personality scales (i.e., IPIP: Re, BIS / BAS, BIS-11) as they were published, for consistency with the existing literature in this area.

Multiple Regression Assumption Testing

Given that multiple regression makes a number of assumptions about the data, assumption testing was conducted prior to running multiple regression analyses. In accordance with Pallant (2009) and Field's (2005) recommendations, tests for the assumptions of sample size, multicollinearity, outliers, normality, linerarity, homoscedasticity and independence of residuals were conducted for each hierarchical multiple regression analysis.

An adequate sample size is important in social science research so that results obtained are able to be generalised (i.e., repeated) with other samples. Stevens (1996; cited in Pallant, 2009) indicated that approximately 15 participants per predictor variable are needed to satisfy an appropriate sample size. Tabachnick and Fidell (2007; cited in Pallant, 2009) recommend using the following formula for calculating sample size requirements: $N > 50 + 8m$ (where m = number of independent variables). Using these as a guide, all multiple regression analyses met the assumption of sample size, with the exception of sexual risk (actual n = 74, recommended n > 90), which was slightly below that recommended.

Multicollinearity exists when independent variables used in regression analyses are highly correlated (r = 0.90 and above) (Pallant, 2009). To check this assumption, Pearson's correlations between each of the independent variables were

assessed (Table 26). Results indicated all independent variables were satisfactorily distinct from one another, hence meeting the assumption of multicollinearity.

Table 26

Pearson's correlation matrix for Study 2 variables

	Sex	Age	IPIP:Re	BasD	BIS-11	SexAt	DSS	DSTF	DSB	SR	DDR	BR	IR	HR
Sex		-0.04	-0.08	-0.02	0.01	-0.09	0.23***	0.13^	0.11	-0.00	0.01	0.05	0.07	0.05
N		248	248	243	230	196	232	213	209	94	248	248	243	248
Age			0.14*	-0.08	-0.09	-0.05	-0.08	-0.08	-0.11	0.05	-0.11^	-0.09	0.05	0.06
N			249	244	231	197	233	214	210	95	249	249	244	249
IPIP:Re				-0.02	-0.12^	-0.06	-0.19**	-0.14*	-0.23**	-0.12	0.00	0.02	-0.07	0.11^
N				244	231	197	233	214	210	95	249	249	244	249
BasD					0.23**	-0.07	0.13*	0.16*	0.19**	0.00	0.07	0.11^	0.08	-0.09
N					230	195	230	210	208	94	244	244	239	244
BIS-11						-0.06	0.22**	0.29***	0.36***	-0.17	0.12^	0.15*	0.21**	-0.19**
N						186	218	201	197	91	231	231	227	231
SexAt							-0.03	0.04	0.32***	-0.12	-0.01	-0.03	-0.03	0.11
N							190	174	176	81	197	197	192	197
DSS								0.74***	0.69***	0.14	0.20**	0.17*	-0.01	-0.19**
N								208	202	90	233	233	233	233
DSTF									0.71***	0.20^	0.21**	0.20**	0.05	-0.16*
N									186	83	214	214	209	214
DSB										-0.08	0.25***	0.15*	0.06	-0.28***
N										80	210	210	205	210
SR											-0.12	0.11	0.03	-0.13
N											95	95	94	95
DDR												0.11^	0.02	-0.11^
N												249	244	249
BR													0.10	-0.08
N													244	249

IR		0.02
	N	244
HR		
	N	

Note. Missing cases pairwise. Overdose Risk Variable is not included as this was a latent variable. IPIP:Re = International Personality Item Pool Responsibility Scale; BasD = Drive subscale of BIS / BAS scales; BIS-11 = Barrett Impulsivity Scale; SexAt = Attitudes to Safer Sex subscale of the Sexual Risks Scale; DSS = Speeding subscale of the driving scale; DSTF = Traffic flow versus rule obedience subscale of the driving scale; DSB = Behavioural subscale of the driving scale; SR = Sexual Risk Variable; DDR = Drug Driving Risk Variable; BR = Binge Risk Variable; IR = Injecting Risk Variable; HR = Harm Reduction Variable. ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

All other results of assumption testing indicated that each dependent variable of interest met the remaining assumptions with one exception. Each dependent variable initially produced Mahalanobis values larger than the recommended critical values, suggesting the presence of outliers. Outliers are defined as cases that have a standardised residual of > 3.3 or < -3.3 (Pallant, 2009). For each dependent variable, the presence and potential influence of outliers was checked by inspecting the Mahalanobis and Cook's distances. Critical values from Tabachnick and Fidell's (2007) statistical text were used as cut-off criteria to deem if the Mahalanobis and Cook's distances were acceptable. For each variable, the offending case(s) were removed from the data set to ensure no violation of this assumption, and therefore ensuring these unusual cases did not impact on the regression analyses. Details of removed cases are presented below in each relevant section.

Prediction of Sexual Risk-Taking Behaviour

Preliminary assumption testing revealed the presence of 2 outliers, which were removed from the data set to ensure appropriate Mahalanobis and Cook's distances values. All other assumptions were met with the exception of sample size, as discussed above. Hierarchical multiple regression was then used to assess the ability of sexual attitudes (as measured by the 'Attitudes towards safer sex' subscale of the *Sexual Risks Scale*) and personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict sexual risk-taking behaviour, after controlling for the influence of sex and age (Table 27).

Sex and age were entered at Step 1, explaining 3.1% of the variance in sexual risk-taking behaviour. This model was non-significant in predicting sexual risk-taking behaviour, $F(2, 71) = 1.13$, $p = 0.331$. After entry of attitudes towards safer sex at Step 2, the total variance explained by the model as a whole increased to 11.2%, with sexual attitudes explaining an additional 8.2% of the variance in sexual risk-taking behaviour, after controlling for sex and age, $\Delta R^2 = .08$, $\Delta F(1, 70) = 6.44$, $p = 0.013$. This model was significant in predicting sexual risk-taking behaviour, $F(3, 70) = 2.95$, $p = 0.038$. After entry of the personality variables at Step 3, the total variance explained by the model as a whole increased to 24.4%, and was a significant predictor of sexual risk-taking behaviour, $F(6, 67) = 3.61$, $p = 0.004$, with the personality measures explaining an additional 13.2% of the variance in sexual risk-taking behaviour, after controlling for sex, age and attitudes towards safer sex, $\Delta R^2 = .13$, $\Delta F(3, 67) = 3.90$, $p = 0.013$. In the final model, attitudes towards safer sex, $t(67) = 2.24$, $p = 0.029$ and rash-spontaneous impulsivity, $t(67) = -2.72$, $p = 0.008$ were statistically significant predictors of sexual risk-taking behaviour, whilst conscientiousness approached significance, $t(67) = -1.86$, $p = 0.068$.

Table 27

Summary of Hierarchical Regression Analyses of Variables Predicting Sexual Risk-Taking Behaviour, N = 74

	b	SE b	β	*p*
Step 1				
Constant	0.69	0.89		
Sex	-0.19	0.41	-0.05	0.648
Age	0.06	0.04	0.17	0.144
Step 2				
Constant	-0.66	1.01		
Sex	-0.32	0.40	-0.09	0.428
Age	0.06	0.04	0.16	0.164
Attitudes to Safer Sex	0.04	0.02	0.29	0.013*
Step 3				
Constant	5.26	2.26		
Sex	-0.47	0.38	-0.14	0.217
Age	0.05	0.04	0.15	0.185
Attitudes to Safer Sex	0.04	0.02	0.26	0.029*
Conscientiousness (IPIP: Re)	-0.07	0.04	-0.21	0.068^
Reward Sensitivity (BAS Drive)	0.02	0.09	0.02	0.860
Rash Spontaneous (BIS-11)	-0.04	0.01	-0.32	0.008**

Note. $R^2 = 0.03$ for Step 1, 0.11 for Step 2 and 0.24 for Step 3: $\Delta R^2 = 0.08$ for Step 2 ($p = .013$), $\Delta R^2 = 0.13$ for Step 3 ($p = 0.013$). ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Prediction of Drug Driving Behaviour

Preliminary assumption testing revealed the presence of 2 outliers, which were removed from the data set to ensure appropriate Mahalanobis and Cook's distances values. All other assumptions were met. Hierarchical multiple regression was used to assess the ability of driving attitudes (measured by the 'speeding' and 'traffic flow versus rule obedience' subscales of Ulleberg and Rundmo's (2002) driving scale), self-reported driving behaviours (measured by the 'driving behaviour' subscale of Ulleberg and Rundmo's (2002) driving scale) and personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict drug driving behaviour, after controlling for the influence of sex and age (Table 28). As stated previously, the 'speeding' and 'traffic

flow versus rule obedience' subscales were selected due to their strong correlations and predictive power with regard to self-reported driving risk-taking behaviour (Ulleberg & Rundmo, 2002).

Sex and age were entered in Step 1, explaining 1.6% of the variance in drug driving behaviour. This model was not significant in predicting drug driving, $F(2, 165) = 1.38$, $p = 0.255$. After entry of driving attitudes and behaviours at Step 2, the total variance explained by the model as a whole increased to 8.3%, with driving attitudes and behaviours explaining an additional 6.7% of the variance in drug driving behaviour after controlling for sex and age, $\Delta R^2 = 0.07$, $\Delta F(3, 162) = 3.93$, $p = 0.010$. This model was significant in predicting drug driving behaviour, $F(5, 162) = 2.94$, $p = 0.014$. After entry of personality variables at Step 3, the total variance explained by the model as a whole was 9.1%, $F(8, 159) = 1.98$, $p = 0.052$, with the personality measures explaining an additional 0.8% of the variance in drug driving behaviour, after controlling for sex, age, driving attitudes and behaviours, $\Delta R^2 = 0.01$, $\Delta F(3, 159) = 0.44$, $p = 0.725$. No individual measures were found to be independent significant predictors of drug driving behaviour in any of the models.

Table 28

Summary of Hierarchical Regression Analyses of Variables Predicting Drug Driving Behaviour, N = 168

	b	SE b	β	*p*
Step 1				
Constant	20.69	8.19		
Sex	-1.08	4.06	-0.02	0.790
Age	-0.53	0.32	-0.13	0.100^
Step 2				
Constant	-2.30	10.42		
Sex	-2.34	4.07	-0.05	0.566
Age	-0.43	0.32	-0.10	0.180
Attitudes: Speeding	0.20	0.67	0.04	0.762
Attitudes: Traffic Flow versus Rule Obedience	0.29	0.41	0.09	0.475
Driving Behaviour	0.57	0.43	0.16	0.189
Step 3				
Constant	-26.40	23.74		
Sex	-1.98	4.11	-0.04	0.631
Age	-0.44	0.32	-0.11	0.173
Attitudes: Speeding	0.25	0.68	0.05	0.710
Attitudes: Traffic Flow versus Rule Obedience	0.26	0.41	0.08	0.529
Driving Behaviour	0.57	0.46	0.16	0.211
Conscientiousness (IPIP: Re)	0.42	0.44	0.08	0.339
Reward Sensitivity (BAS Drive)	0.09	0.83	0.01	0.917
Rash Spontaneous (BIS-11)	0.09	0.16	0.05	0.558

Note. $R^2 = 0.02$ for Step 1, 0.08 for Step 2 and 0.09 for Step 3: $\Delta R^2 = 0.07$ for Step 2 ($p = .010$), $\Delta R^2 = 0.01$ for Step 3 ($p = 0.725$). ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Prediction of Binge Risk-Taking Behaviour

Preliminary assumption testing revealed the presence of 3 outliers, which were removed from the data set to ensure appropriate Mahalanobis and Cook's distances values. All other assumptions were met. Hierarchical multiple regression was used to assess the ability of personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict binge risk-taking behaviour, after controlling for the influence of sex and age

(Table 29). Sex and age were entered in Step 1, explaining 1.1% of the variance in binge risk-taking behaviour. This model was not significant in predicting binge risk-taking behaviour, $F(2, 223) = 1.28$, $p = 0.281$. After entry of personality variables at Step 2, the total variance explained by the model as a whole was 3.9%, $F(5, 220) = 1.79$, $p = 0.115$, with personality measures explaining an additional 2.8% of the variance in binge risk-taking behaviour, after controlling for sex and age, $\Delta R^2 = .03$, $\Delta F(3, 220) = 2.12$, $p = 0.098$. In the final model, no measures were found to be independent statistically significant predictors of binge risk-taking behaviour, although rash spontaneous impulsivity, $t(220) = 1.79$, $p = 0.074$ approached significance.

Table 29

Summary of Hierarchical Regression Analyses of Variables Predicting Binge Risk-Taking Behaviour, N = 226

	b	SE b	β	*p*
Step 1				
Constant	2.26	1.10		
Sex	0.52	0.55	0.06	0.343
Age	-0.05	0.04	-0.08	0.228
Step 2				
Constant	-2.79	3.05		
Sex	0.55	0.55	0.07	0.310
Age	-0.05	0.04	-0.07	0.278
Conscientiousness (IPIP: Re)	0.02	0.06	0.03	0.707
Reward Sensitivity (BAS Drive)	0.14	0.11	0.09	0.191
Rash Spontaneous (BIS-11)	0.04	0.02	0.12	0.074^

Note. $R^2 = 0.01$ for Step 1 and 0.04 for Step 2: $\Delta R^2 = 0.03$ for Step 2 ($p = 0.098$). ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Prediction of Overdose Risk-Taking Behaviour

As stated previously, initial analyses involved using MPlus (Version 5.21: Muthèn & Muthèn, 2009) with an intention to conduct structural equation modelling using latent variables. For the domain of overdose risk-taking behaviours, modelling using MPlus revealed a good measurement model (i.e., the fit of the individual items comprising the overdose risk-taking domain to a single, homogenous latent construct). MPlus was used to assess the ability of personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict the latent construct of overdose risk-taking behaviour, after controlling for the influence of sex and age (Table 30). Sex and age were entered in Step 1, explaining 10.1% of the variance in overdose risk-taking behaviour. After entry of personality variables at Step 2, the total variance explained by the model as a whole was 22.6%. In the final model, both sex and age were statistically significant predictors of overdose risk-taking behaviour, whilst reward sensitivity and rash spontaneous impulsivity approached significance.

Table 30

Summary of MPlus Analyses of Variables Predicting Overdose Risk-Taking Behaviour, N = 229

	b	SE b	β	*p*
Step 1				
Constant	1.07	0.47		
Sex	0.17	0.10	0.25	0.080^
Age	0.01	0.01	0.21	0.092^
Step 2				
Constant	-2.29	1.39		
Sex	0.21	0.11	0.27	0.049*
Age	0.01	0.01	0.23	0.048*
Conscientiousness (IPIP:Re)	-0.002	0.01	-0.02	0.853
Reward Sensitivity (BAS Drive)	0.03	0.02	0.20	0.078^
Rash Spontaneous (BIS-11)	0.01	0.004	0.25	0.056^

Note. $R^2 = 0.10$ for Step 1 and 0.23 for Step 2. ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Prediction of Injecting Risk-Taking Behaviour

Preliminary assumption testing revealed the presence of 3 outliers, which were removed from the data set to ensure appropriate Mahalanobis and Cook's distances values. All other assumptions were met. Hierarchical multiple regression was used to assess the ability of personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict injecting risk-taking behaviour, after controlling for the influence of sex and age (Table 31). Sex and age were entered in Step 1, explaining 1.1% of the variance in injecting risk-taking behaviour. This model was not significant in predicting injecting risk-taking behaviour, $F(2, 219) = 1.18$, $p = 0.311$. After entry of the personality variables at Step 2, the total variance explained by the model as a whole increased to 6.2%, $F(5, 216) = 2.84$, $p = .016$, with personality measures explaining an additional 5.1% of the variance in injecting risk-taking behaviour, after controlling for sex and age, $\Delta R^2 = .05$, $\Delta F(3, 216) = 3.93$, $p = .009$. In the final

model, rash spontaneous impulsivity, $t(216) = 2.89$, $p = 0.004$ was a statistically significant predictor of injecting risk-taking behaviour.

Table 31

Summary of Hierarchical Regression Analyses of Variables Predicting Injecting Risk-Taking Behaviour, N = 222

	b	SE b	β	*p*
Step 1				
Constant	0.03	0.10		
Sex	0.07	0.05	0.09	0.210
Age	0.00	0.00	0.07	0.331
Step 2				
Constant	-0.18	0.29		
Sex	0.06	0.05	0.08	0.226
Age	0.01	0.00	0.09	0.173
Conscientiousness (IPIP: Re)	-0.01	0.01	-0.07	0.273
Reward Sensitivity (BAS Drive)	0.00	0.01	0.02	0.763
Rash Spontaneous (BIS-11)	0.01	0.00	0.20	0.004**

Note. $R^2 = 0.01$ for Step 1 and 0.06 for Step 2: $\Delta R^2 = 0.05$ for Step 2 ($p = 0.009$). ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Prediction of Harm Reduction Behaviour

Preliminary assumption testing revealed the presence of 3 outliers, which were removed from the data set to ensure appropriate Mahalanobis and Cook's distances values. All other assumptions were met. Hierarchical multiple regression was used to assess the ability of personality measures (conscientiousness (IPIP:Re), reward sensitivity (BAS Drive) and rash spontaneous impulsivity (BIS-11)) to predict harm reduction behaviours, after controlling for the influence of sex and age (Table 32). Sex and age were entered in Step 1, explaining 0.7% of the variance in harm reduction behaviours. This model was not significant in predicting harm reduction behaviours, $F(2, 223) = 0.78$, $p = 0.462$. After entry of personality

variables at Step 2, the total variance explained by the model as a whole was 5.0%, $F(5, 220) = 2.31$, $p = 0.045$, with personality measures explaining an additional 4.3% of the variance in harm reduction behaviours, after controlling for sex and age, $\Delta R^2 = .04$, $\Delta F(3, 220) = 3.32$, $p = .021$. In the final model, rash spontaneous impulsivity, $t(220) = -2.35$, $p = 0.020$ was a statistically significant predictor of engagement in harm reduction behaviour, with greater levels of rash-spontaneous impulsivity suggestive of lower levels of harm reduction behaviour.

Table 32

Summary of Hierarchical Regression Analyses of Variables Predicting Harm Reduction Behaviour, N = 226

	b	SE b	β	*p*
Step 1				
Constant	3.29	0.42		
Sex	0.19	0.21	0.06	0.379
Age	0.02	0.02	0.06	0.346
Step 2				
Constant	3.98	1.16		
Sex	0.20	0.21	0.07	0.324
Age	0.01	0.02	0.04	0.557
Conscientiousness (IPIP: Re)	0.03	0.02	0.08	0.216
Reward Sensitivity (BAS Drive)	-0.03	0.04	-0.06	0.409
Rash Spontaneous (BIS-11)	-0.02	0.01	-0.16	0.020*

Note. $R^2 = 0.01$ for Step 1 and 0.05 for Step 2: $\Delta R^2 = 0.04$ for Step 2 ($p = .021$). ^$p < 0.10$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Chapter 15: Study 2 Discussion

Study 2 aimed to investigate the extent to which the personality traits of rash-spontaneous impulsivity, reward sensitivity and conscientiousness were able to successfully predict REU who engage in risk-taking and / or harm reduction behaviours associated with their ecstasy use, over and beyond what demographic (i.e., sex and age) factors may predict. This study also examined the role that attitudes towards sex and driving practices may play in predicting sexual and driving risk-taking behaviours, and how well personality variables perform as predictor variables in these risk-taking domains when attitudinal variables are controlled for.

Demographic Variables as Predictors of Risk-Taking and Harm Reduction

It was hypothesised that sex and age (i.e., being male and being younger) would be successful predictors of engagement in risk-taking behaviour, whilst no expectations were held regarding the relationship between sex, age and the harm reduction variable. Results of analyses indicated that sex and age were not significant predictor variables in relation to any domains of risk-taking or the harm reduction variable, with the exception of successfully predicting overdose risk-taking behaviour. With regard to the overdose risk-taking domain, results indicated that older males were significantly more likely to engage in behaviours indicative of overdose risk. Together, age and sex explained a moderate amount (10.1%) of the variance in overdose risk-taking behaviour.

The finding that demographic variables were not successful predictors of REU's engagement in risk-taking behaviours is not altogether surprising, as despite a

consensus in the general population that younger males are more frequently involved in risk-taking behaviour, previous research has shown mixed results in this regard. Findings from Study 1 implicated sex as a successful significant predictor variable only for the domain of driving under the influence of cannabis, where males were more likely to engage in this behaviour. In relation to age, results from Study 1 showed that age only successfully predicted REU who drove under the influence of alcohol and party drugs, in that older REU were more likely to engage in these risk-taking behaviours. Sex and age did not successfully predict any of the other domains of risk-taking measured. In a sample of REU, Topp, Hando and Dillon (1999) found no age or sex differences between those who had engaged in risky casual sex in the preceding month versus those who did not. However, Greene et al.'s (2000) results revealed significant sex and age differences in every domain of risk-taking behaviour, in that older males were significantly more likely to engage in risky sex, risky driving and drink driving behaviours. However, it should be noted that Greene et al.'s (2000) sample included adolescents and university students from the general population, which is a different sample to that of the current research. It should also be noted that all participants in the current study are 'risky' to a degree because they all use illicit substances. It is also important to keep in mind that the current sample on a whole was quite young, with a mean age of 22.9 years (1st quartile = 19 years, 3rd quartile = 24 years). Therefore, as most of the sample's age fell within a very small age band, it is possible there was too little age variation to yield any significant findings.

With regards to the harm reduction variable, this study revealed age and sex were not significant predictor variables. This finding is consistent with Allott and

Redman (2006), who found no sex differences in the overall use of harm reduction strategies in their sample of REU, but is in opposition to Akram and Galt (1999), who found that females were significantly more likely than males to take harm reducing steps in relation to their ecstasy use. However, it is unknown if Akram and Galt's (1999) finding was simply a difference between the sexes in behaviours, or if females were more prone to experience harm from MDMA. This distinction is important to clarify in future research. The finding that age was not a significant predictor variable was consistent with Akram and Galt's (1999) results that no significant relationship existed between age and harm reduction, but is in contradiction to Allott and Redman's (2006) results that being younger was significantly associated with pre-loading. It should be noted that Allott and Redman's (2006) sample were older than the current sample, with a mean age of 26.5 years versus 22.9 years. There have been few other studies regarding harm reduction strategies employed by REU; therefore, more research is clearly needed to clarify the relationship between demographic variables and harm reduction practices.

It may be concluded from Study 2 that age and sex are not predictor variables of importance with regards to successfully predicting REU's engagement in health related risk-taking behaviours, or engagement in harm reduction behaviour. These findings may be indicative of the nature of the sample group itself, given that both male and female REUs as a cohort are deemed 'risky', and due to the sample's age falling within a very small age window.

Attitude Variables as Predictors of Risk-Taking

Previous research has shown that attitudes play an important role in predicting engagement in risk-taking behaviour. It was expected that less positive attitudes regarding safer sexual practices and driving would be predictive of REU who engaged in sexual risk behaviour and drug driving, or that more positive attitudes towards these behaviours would result in less risk-taking behaviour.

Sexual Attitudes as Predictors of Risky Sexual Behaviour

Results indicated that the role of an individual's attitudes towards safer sex was an important variable in the outcome of how often the individual engaged in risky sexual behaviour. Over and beyond demographic variables, attitudes towards safer sex were a significant predictor variable in a positive fashion, explaining an additional small amount (8.2%) of the variance in sexual risk-taking behaviour. This finding implied that as a participant's attitude score increased (i.e., attitudes endorsed became riskier), the more often they engaged in behaviours indicative of sexual risk-taking.

Therefore, in the current study a significant relationship existed between less ideal attitudes towards condom use and safer sexual practices, in that negative attitudes predicted more frequent involvement in sexual risk-taking behaviour (i.e., unprotected sex with casual partners). This finding is consistent with other research (e.g., Sterk, Klein & Elifson, 2004) that demonstrated negative attitudes towards condoms and safer sex practices were predictive of engagement in riskier sexual

behaviours, or that more positive condom attitudes predict greater adherence to safe sexual behaviour (Bogart et al., 2005; Heeren, Jemmott, Mandeya & Tyler, 2007; Khumsaen & Gary, 2009; Morrison-Beedy, Carey, Feng & Tu, 2008; Rosengard, Anderson & Stein, 2006).

As these results indicated that sexual attitudes only explained a small amount of the variance (8.2%) in sexual risk-taking behaviour, it is clear that attitudes provide only a piece of the puzzle in relation to understanding why REU engage in risk-taking behaviour. Therefore, other contextual, situational and personal variables are clearly important in establishing the bigger picture.

Driving Attitudes as Predictors of Drug Driving

As stated previously, two driving attitude scales (towards speeding and traffic flow versus rule obedience), and a driving behaviour scale were used to predict engagement in drug driving. Contrary to expectations, none of these scales were significant predictors of drug driving. However, these scales explained an additional 6.7% of the variance beyond demographic factors, and coupled with age and sex, produced a significant model in predicting drug driving behaviour. In this model, REU who were younger females and REU with riskier driving attitudes predicted drug driving behaviour.

The finding that driver attitudes were not independent predictors of driver behaviour is contrary to previous research findings (e.g., Nordfjærn, Jørgensen & Rundmo, 2010; Yilmaz & Çelĩk, 2004), which have clearly shown that driver

attitudes predicted driver behaviour, including driving under the influence of alcohol. However, the behaviour at focus for Study 2, drug driving behaviour, was not measured in these studies.

As discussed in previous sections, the driving subscales were selected due to their reported predictive power in risky driving practices (see Ulleberg & Rundmo, 2002). It is possible, although previous research suggests is unlikely, that REU's attitudes towards speeding and traffic flow versus rule obedience may have little to do with whether or not they drug drive. Additionally, it should also be noted that previous research regarding the predictive power of driving attitudes on driving behaviour, whilst including drink driving behaviour, have not included measures of drug driving. There is the possibility that the prediction of drug driving behaviour differs substantially from the prediction of other risky driving behaviour, such as speeding and taking risks in traffic, which is what has been measured in other studies. Clearly more research is needed on the possible myriad of factors not measured here (e.g., impaired cognitive capacity due to the effect of the drug(s), perceived impairment, another aspect of personality, peer pressure, lack of public transport, distance needed to travel, etc.) that may contribute to drug driving behaviour in a sample of REU.

Personality Variables as Predictors of Risk-Taking and Harm Reduction

Rash-spontaneous Impulsivity

Results regarding the utility of rash-spontaneous impulsivity as a predictor variable were mixed. As hypothesised, rash-spontaneous impulsivity was a significant predictor of injecting risk-taking behaviours in a positive fashion, and it approached significance in relation to predicting binge and overdose risk-taking behaviours. Therefore, with respect to these risk-taking domains, it can be concluded that as REU's scores on rash-spontaneous impulsivity measures increased (i.e., became more rash impulsive), they more likely they were to have engaged in injecting, binge and / or overdose risk-taking behaviours. In relation to injecting, this finding is contrary to the finding in Study 1 that injecting risk-taking behaviour was predicted by rash-spontaneous impulsivity in a negative fashion, but aligns with previous research that suggests heightened impulsivity is associated with injecting drug use (e.g., Checkley, Thompson, Crofts & Mijch, 1996; Lapworth, Dawe, Davis, Kavanagh, Young & Saunders, 2009). The alternate directions of rash-spontaneous impulsivity in Studies 1 and 2 is likely due to the very small number of injectors in each study, whereby the models generated have fit to the individual quirks of that particular small group rather than producing a generalisble model.

Contrary to predicted, rash-spontaneous impulsivity was a significant predictor of sexual risk-taking behaviour in a negative fashion, in that a lower score on the rash-spontaneous measure (i.e., a tendency to be less rash-impulsive) predicted engagement in risky sexual behaviour. In the model, addition of all three

personality measures explained an additional moderate amount (13.2%) of the variance in sexual risk-taking behaviour, after controlling for sex, age and attitudes towards safer sex. This finding was very surprising given that previous research (e.g., Arnett, 1994; Cooper et al., 2000; Greene et al., 2000) has shown the tendency to make rash, impulsive decisions is related to engagement in sexual risk-taking. Additionally, rash-spontaneous impulsivity (intensity) was predictive of REU's engagement in sexual risk-taking behaviours in Study 1, despite the final model proving non-useful given the small proportion of variance explained and the low percentage of individuals at risk that were correctly predicted. It also makes sense that persons high in rash-spontaneous impulsivity, in the intensity of a sexual moment, may be more likely to forego using sexual protection with casual partners than someone who is less impulsive. One potential explanation is that the sample as a whole was rather impulsive, and hence predictions made in general population samples do not hold true in a collectively impulsive sample. On the rash-spontaneous impulsivity measure, the highest possible score, 130, was descriptive of a very highly rash-spontaneous impulsive individual. The average rash-spontaneous impulsivity score in the current sample was 68.68 (*SD* = 13.48; 1st quartile = 58, 3rd quartile = 78), which appears to be reflective of moderate to high rash-spontaneous impulsivity. Average scores from the general population on this rash-spontaneous measure are unknown.

As predicted, rash-spontaneous impulsivity was a significant predictor of harm reduction behaviours, in that REU who scored lower on the rash-spontaneous measure (i.e., were less rash-impulsive) engaged in a greater number of harm reduction strategies. Addition of all three personality factors explained a small

amount (4.3%) of the variance in harm reduction behaviour. No previous research regarding rash-spontaneous impulsivity and REU's level of engagement in harm reducing behaviours has been found; however, it stands to reason that persons who tend to act in a rash, spontaneous manner would be less likely to engage in harm reducing strategies in a planful way. Thus, this finding forms the beginning of research knowledge into personality attributes of REU, specifically rash-spontaneous impulsivity, and its successful role in predicting those REU who engage in proactive harm reduction strategies. This finding is important as it implicates the role rash-spontaneous impulsivity plays in the engagement / non-engagement of harm reduction behaviour in a sample of REU. This finding is also of particular importance for the development and refinement of appropriate harm reduction programs for REU.

Reward Sensitivity

A small number of previous studies have indicated a direct relationship between reward sensitivity and substance and alcohol use / misuse. However, there are no previous studies regarding the role of reward sensitivity as predicting health related risk-taking behaviours. Due to the paucity of research regarding the role reward sensitivity may potentially play in relation to predicting REU's engagement in risk-taking or harm reduction behaviours, no expectations were held with regards to its potential predictive power.

Overall, results from this study demonstrated that reward sensitivity was not statistically successful in predicting REU who engaged in any domain of risk-taking

behaviour or the harm reduction variable. However, reward sensitivity did approach significance in relation to predicting overdose risk-taking behaviour in a positive fashion. Despite not reaching levels of significance, results indicate that reward sensitivity was positively associated with all domains of risk-taking, in that a higher level of reward sensitivity was associated with more frequent engagement in all domains of risk-taking behaviour. Although not significant, reward sensitivity was negatively associated with the harm reduction variable, in that a lower level of reward sensitivity was associated with more frequent involvement in harm reduction behaviour. Despite these non-significant results, the relationship between reward sensitivity, risk-taking behaviours and harm reduction behaviour are pointing in the direction that is consistent with previous research (e.g., Loxton et al., 2008), albeit clearly contributing an extremely small proportion of the variance in these behaviours, if at all. However, it is clear that further research regarding reward sensitivity is required to add to this research finding, specifically in a population of REU.

Evaluation of the Two Factor Model of Impulsivity

Dawe and Loxton's (2004) two factor model of impulsivity conceptualises there are two distinct factors of impulsivity, reward sensitivity and rash-spontaneous impulsivity, that play a role in the development of hazardous substance use. Generally speaking, there is a robust amount of research regarding the rash-spontaneous factor, whilst research regarding reward sensitivity is less well developed.

Results from Study 2 appear to confirm the validity of the two factor model of impulsivity, as reward sensitivity and rash-spontaneous impulsivity appear to be distinct factors in relation to the different roles they play in the prediction of risk-taking and harm reduction behaviours evidenced in a sample of REU. Specifically, results from this research provide more support for the role of rash-spontaneous impulsivity as a successful predictor variable than reward sensitivity. This could be due to the fact that rash-spontaneous impulsivity, on a neurophysiological level, is proposed to be related to functioning in serotonin levels, whilst reward sensitivity is proposed to be related to the functioning of the mesolimbic dopamine system (Gullo & Dawe, 2008). Given MDMA's known primary effects on the serotonin system, it could be that specifically for a sample group of REU, the rash-spontaneous factor of impulsivity plays a more important role than reward sensitivity.

Additionally, differences in reward sensitivity reflect individual differences in an individual's purposeful drive to obtain rewarding stimuli. Gullo and Dawe (2008) liken an individual with heightened reward sensitivity as "a speeding motorist who travels toward their desired destination (i.e., a goal or reward) with great haste." On a behavioural level, reward sensitivity has been related to reward conditioning, attention to reward cues and craving (Gullo & Dawe, 2008). Therefore, as the current study behaviourally measured engagement in risk-taking behaviour and harm reduction behaviour, it may be that reward sensitivity is not as relevant or influential as rash-spontaneous impulsivity, when the goal is to differentiate between REU who engage in additional risk-taking behaviours versus those who do not. Moreover, given that reward sensitivity plays a role in cued-cravings and motivation to use drugs (Dawe & Loxton, 2004), it could be hypothesised that reward sensitivity is

more relevant for drugs known to cause dependence, such as alcohol or opioids. Whether or not there is evidence for MDMA dependence is debated (see Degenhardt, Bruno & Topp (2010) for a review).

Conscientiousness

Despite findings from Study 1, based on previous research (e.g., Bogg & Roberts, 2004; Caspi et al., 1995) conscientiousness was expected to play a significant role in predicting involvement in risk-taking behaviours in a negative fashion, and involvement in harm reduction behaviours in a positive fashion. However, results from Study 2 indicated this was not the case – conscientiousness was not a statistically significant predictor in relation to any domain of risk-taking or the harm reduction variable, although it did approach significance in relation to predicting sexual risk-taking in a negative fashion, in that individuals who scored lower on the conscientious measure (i.e., were less conscientious) were more likely to engage in sexual risky behaviours.

Again, it was surprising that conscientiousness was not a successful predictor variable of REU's engagement in risk-taking behaviour, given that previous research (e.g, Bogg & Roberts, 2004; Flory et al., 2002; Roberts & Bogg, 2004) has implicated low levels of conscientiousness as predictive of various health-related risk-taking behaviours. As stated previously, the failure to replicate such findings may be due to the multi-faceted nature of the conscientiousness construct, in that it is possible the IPIP:Re assessment measure did not tap into the conscientiousness construct the way in which intended; however, there is no evidence this is the case.

Additionally, given the socially desirable nature of some questions on the assessment (e.g., *'I return extra change when a cashier makes a mistake; I like to be of service to others;* and *I take others' interests into account'*), it is possible that some participants may have answered in a socially desirable, biased manner, which may have artificially inflated their conscientiousness score. It is also possible that the sample group as a whole scored poorly (or highly) on the conscientiousness measure. As stated previously, norms are not available for the IPIP:Re measure; however, the highest score achievable, 50, indicates an individual is highly conscientious. As consistent with the sample in Study 1, the current sample appeared to report moderate to high levels of conscientiousness (M = 40.28, SD = 5.31, 1st quartile = 37, 3rd quartile = 44). Therefore, it is possible there was too little variation in conscientiousness scores to have a meaningful impact on risk-taking behaviour.

Thus, it may be concluded from Study 2 that conscientiousness is not a successful predictor variable with regards to predicting REU's engagement in health related risk-taking behaviours, or engagement in harm reduction behaviour. Despite significant, albeit small, findings between conscientiousness and health related risk-taking behaviours in the general population, the current finding, which is consistent with results from Study 1, indicates that conscientiousness may not be a personality factor of importance in a sample of REU.

Limitations

As the current study was hosted online, it is possible that the sample, although comparable to other studies involving REU, may have differed in

comparison to samples obtained in the more traditional face-to-face or pencil / paper methods of data collection. Previous research has indicated (e.g., Johnston, Laslett, Miller, Jenkinson, Fry & Dietze, 2004) that web-based samples may access a different subpopulation than face to face and telephone interviews for psychostimulant users. For example, in their research as part of the Victorian psychostimulant monitoring program, Johnston et al. (2004) found their web-based sample were younger, more likely to be students or employed, less likely to be in drug and alcohol treatment and less likely to have ever injected any drug than their face to face or telephone participants. The samples also differed in that the web-based sample accessed more cocaine users, which were not represented in the face to face interviews. Similarly, Wang, Lee, Lew-Ting, Hsiao, Chen and Chen (2005) compared an internet versus pencil-paper administered drug use questionnaire. Results indicated that the internet group was a more diverse, representative sample, reported higher lifetime prevalence of drug use, and the response rate was higher than the pencil-paper group. The authors concluded that internet based research may reach a larger, more diverse sample of drug users, and provides anonymity so that users feel more comfortable reporting sensitive information. However, contextually, this may be country and culture dependent.

Further, online research may potentially impose a "technological divide" that may act as a barrier, particularly to lower income individuals that may not have internet access (Miller, Strang & Miller, 2010). As the current research was conducted online, only REU with internet access were able to complete the survey. However, there is no evidence to suggest there would be marked differences between REU who access the internet and those who do not. It could be assumed from the

overall demographic characteristics of REU as a group that they are likely to access the internet, given they are young and have completed educational studies and / or are employed.

It should be noted that the sample obtained in Study 2 was international, representing a total of 14 countries, whereas the Study 1 sample were strictly accessed from Australia. Despite this, the samples from each study were very comparable, with few if any differences noted. Therefore, it can be concluded that REU as a collective group appear to have similar profiles across contextual and cultural settings, potentially allowing for the generalisability of findings across countries for other groups of REU.

Another limitation with regard to conducting this study online is the psychometric properties of internet administered tests. Buchanan, Ali, Heffernan, Ling, Parrott, Rodgers and Scholey (2005) stated the equivalence between internet and pencil - paper tests cannot be taken for granted, and that online tests should be validated for the construct they intend to measure, as the characteristics of the testing medium may impact on the psychometric properties of a test and its power to reliably and validly measure the construct of interest. However, the authors concluded that the differences between online and pencil - paper versions are usually minor. Additionally, there is no evidence to suggest that psychometrics of the online assessments were altered.

As stated in relation to Study 1, another limitation of the current study was its cross-sectional design. However, this type of design is often employed in alcohol

and drug research, and therefore the results of this study are believed to be comparable with other similar research studies. A further limitation is the study's reasonably small sample size of 249 subjects. However, the characteristics of the sample were highly similar to other groups of REU studied across Australia, and therefore deemed likely to be a representative sample of REU.

Chapter 16: Overall Discussion

Studies 1 and 2 attempted to explore and clarify the role that personality factors (rash-spontaneous impulsivity, reward sensitivity and conscientiousness) play in relation to predicting engagement in health related risk-taking and harm reduction behaviours in a sample of REU.

Results from the two studies indicate that rash-spontaneous impulsivity, of the three personality factors measured, was the most successful and consistent predictor variable. In Study 1, rash-spontaneous impulsivity scores were significantly higher in REU deemed at risk for the categories of sexual, alcohol driving and binge risk. In a predictive fashion, rash-spontaneous impulsivity was able to successfully predict REU who drove under the influence of alcohol, cannabis and party drugs. In Study 2, rash-spontaneous impulsivity was a significant predictor of injecting risk-taking behaviours, and it approached significance in relation to predicting binge and overdose risk-taking behaviours. Additionally, rash-spontaneous impulsivity was a significant predictor of harm reduction behaviours, in that REU who scored lower on the rash-spontaneous measure (i.e., were less rash-impulsive) engaged in a greater number of harm reduction strategies.

Results from the two studies indicated that the other two personality variables of interest, reward sensitivity and conscientiousness, were not successful predictors of REU's engagement in risk-taking or harm reduction behaviours. Therefore, these two aspects of personality appear to be unimportant in relation to predicting whether a REU engages in additional health related risk-taking behaviours, over and beyond

their ecstasy use, particularly in the context of consideration of rash-spontaneous impulsivity.

Clinical Application and Usefulness of Results

The results of this research add to the existing body of knowledge regarding the nature and prevalence of engagement in health related risk-taking behaviours and harm reduction strategies evidenced in two samples of REU. This research has established previously unmeasured relationships regarding the ability of personality variables (rash-spontaneous impulsivity, reward sensitivity and conscientiousness) to predict risk-taking and harm reduction behaviour in a large sample of REU.

Specifically, the findings regarding rash-spontaneous impulsivity as a successful predictor variable of risk-taking and harm reduction behaviour, and the lack of predictive ability of the reward sensitivity and conscientiousness personality variables, were completely novel. This research is also important in that it has begun to address the neglected area of harm reduction practices employed by REU. It is hoped that research such as this will launch further interest and research into this understudied, yet very important, area.

This research is also important in that it establishes that among a group of REU who collectively may be defined as 'risky,' that there appears to be distinct sub-groups of REU who also engage in additional health related risk-taking behaviours, such as having unprotected sex with casual partners and driving under the influence of drugs. Thus, it would appear that some REU are indeed more 'risky'

than others. On the same token, there appears to be a distinct sub-group of REU who engage in harm reduction behaviours, thus lending support that some REU attempt to minimise harms associated with their ecstasy use, whilst other REU do not. The personality factor of rash-spontaneous impulsivity appears to be the most reliable and successful attribute that distinguishes these 'more risky' REU from their 'less risky' REU counterparts, whilst personality attributes surrounding reward sensitivity and conscientiousness appear to be unrelated to engagement / non-engagement in these behaviours. .

These results are potentially clinically significant in that they could alter the development of successful educational and harm reduction programs for REU. In relation to addressing risk-taking behaviours, such as encouraging safer sexual practices and non drug driving, the nature of educational and harm reduction messages need to be tailored to the sub-group considered at risk. Results of this study indicate that REU high in rash-spontaneous impulsivity are most at-risk for engaging in risk-taking behaviour. Therefore, for example, if the goal was to promote condom use among REU, the harm reduction message may be most effective if condom use and safer sexual behaviours are associated with concepts such as sexual variety, new experiences, and sensual experimentation, etc., in that messages portraying safer sex as exciting, novel, and erotic may be more likely to appeal to persons high in rash-spontaneous impulsivity (Dolezal, Meyer-Bahlburg, Remien & Petkova, 1997). Additionally, as findings from this study indicated that negative attitudes towards condoms and safer sex predicted more frequent involvement in sexual risk-taking behaviour (i.e., unprotected sex with casual partners), successful harm reduction programs also need to address such negative

attitudes towards using condoms (Sterk et al., 2004). Therefore, a tailored, multifaceted campaign of this nature would be more effective than a campaign that aimed to provoke anxiety and / or fear about contracting HIV, for instance.

Results of this research also indicate that many REU reported to engage in some type of harm reduction behaviour to minimise the perceived ecstasy related harms associated with their regular ecstasy use. This finding in itself is clinically important, as it indicates that many REU are seeking information and utilising various harm reduction strategies (albeit their clinical effectiveness is unknown) to minimise ecstasy related harm. Therefore, this finding reveals there is currently a wonderful opportunity to educate and to provide reliable information to REU regarding effective harm reduction strategies. It is encouraging that results of this study indicate that many REU are indeed open and receptive to such information.

Taken together, findings from this research implicate that successful education and harm reduction programs need to incorporate a component on encouraging proactive approaches to minimising ecstasy related harm, in addition to components that focus on addressing associated risk-taking behaviour. Such a holistic approach that focuses on both reducing risk-taking behaviour (e.g., promoting safer sex, promoting public transport use instead of drug driving, etc.), together with promoting active engagement in harm reduction strategies (e.g., decreasing the amount of ecstasy taken, the use of pill testing kits, etc.) may be the most effective campaign to reduce overall harm.

Future Research

In general there is a paucity of research regarding the usefulness of personality factors in predicting REU's engagement in health related risk-taking behaviours, over and beyond their regular ecstasy use. The current studies lend support for the role of rash-spontaneous impulsivity, whilst concluding that reward sensitivity and conscientiousness were seemingly unimportant predictor variables. More research is needed in samples of REU regarding these three personality factors in order to add to the results obtained, and to support or refute the conclusions made from these two studies.

Lastly, research regarding the actual clinical effectiveness of harm reduction strategies currently being employed by REU is imperative. Such research is needed in order to provide REU with research-validated information regarding the efficacy of harm reduction practices, so that REU are then able to make educated decisions regarding their ecstasy use and the use of harm reduction strategies.

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Date____/____/06

Interviewer _____

State _____

Party Drugs Initiative

National Drug and Alcohol Research Centre

University of New South Wales

SECTION A: Demographics

1. Sex

Male 1
Female 0

2. Age _____ years

3. Postcode_____

3a. *(If in NSW)* Area where you live:

No fixed address 0
Inner city 1
East.....2
Inner west 3
South west 4
West.....5
South 6
North 7
North west.....7a
Non-metropolitan 8

Or *(In other jurisdictions)* Suburb you live in:
_____

3b. What type of accommodation do you *currently* live in?

Own house/flat.....1
Rented house/flat.....2
Parents'/family house.....3
Boarding house/hostel 4
Shelter/refuge 5
Drug treatment residence 6
No fixed address/homeless...7
Other accommodation.....8
(Specify_____)

4. What is the main language you speak at home?

English 1
Other 2
(Specify_____)

5. Are you of Aboriginal or Torres Strait Islander origin?
(Mark one response only)

No..... 0
Yes, Aboriginal..... 1
Yes, Torres Strait Islander... 2
Yes, both Aboriginal and Torres Strait Islander 3

6. What grade of school did you complete?

Year_____

7. Have you **completed** any course after school?

No 0
Yes, trade/technical 1
Yes, university/college 2
Specify qualification
_____

8. How are you employed at the moment? *(mark only one)*

Not employed..... 1
Full time 2
Part time/casual 3
Full time student 5
Home duties..... 6
Other 7
(Specify_____)

9. Are you currently in any form of drug treatment?

No 0
Yes 1
(Specify _____)

10. Have you ever been in prison? (i.e. convicted of an offence)

Yes 1
No 0

11. Which of the following best describes your sexual identity?
(read out all responses)

Heterosexual..... 1
Gay male 2
Lesbian 3
Bisexual 4
Other..... 5
(Specify_____)

12. What is your current relationship status? *(read out all responses)*

Married/Defacto 1
Regular partner..... 2
Single..... 3
Separated 4
Divorced 5
Widow..... 6
Other..... 7
(Specify_____)

SECTION B: Drug use

This section is about your use of ecstasy and other drugs. Some of the questions ask for a lot of detail that you might not remember; please estimate if you're not sure. And please remember again, everything you say is completely confidential.

1. How old were you when you first tried ecstasy?

_____years

2. How old were you when you first started to use ecstasy regularly? *(at least once a month)*

_____years

3. Have you ever injected any drug?

No 0
Yes 1

If No Go to Q5

3a. How old were you when you first injected any drug?

_____Years

4. What drug did you first inject? *(<u>one</u> response only)*

Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
Hallucinogens (LSD) 6
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy) 9
Heroin 10
Methadone 11
Other opiates 12
Benzodiazepines 13
Steroids 14
Other 15
(Specify_____)

5. What is your <u>main</u> drug of choice? i.e. favourite or preferred drug *(<u>one</u> response only)*

Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy) 9
1,4B 9a
GBL 9b
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Tobacco 17
Benzodiazepines 18
Steroids 19
Can't specify 20
Other 21
(Specify_____)

6. How have you *mainly* used ecstasy in the last 6 months? (i.e. more than half the time) *(<u>one</u> response only)*

Injected 1
Snorted 2
Swallowed 3
Shelved/shafted 4

7. Have you used the following drugs? .....

**Interviewer note: Shelving/shafting refers to vaginal/anal administration*
***Interviewer note: After obtaining no. days used speed/base/crystal, ask TOTAL days used any meth*
**** Interviewer note: After obtaining no.days used ecstasy pills/powder; ask TOTAL days used any ecstasy*
 # Read: Now looking at amounts used in a session (ie period of continuous use without sleep)
What is the average amount you have used in a session in the last six months?
What is the most amount of you have used in a session in the last six months?
Interviewer note: Only code 'other amount' when measure specified by participant is something other than that listed in previous column

Drug Class Yes = 1, No = 0	Ever used	Age 1st used	Ever inject	Injected last 6 mths	No days inject last 6	Ever Smoke	Smoke 6 mths	Ever snort	Snort 6 mths	Ever Swallow	Swall 6 mths	*Ever shelve/ shaft	*Shelve/ shaft 6 mths	No days used last 6	***Days used any ecstasy	**Days used any meth	#Average amount used last 6 mths	## Average (specify other measure)	Most used last 6 mths	## Most amount (specify other measure)
1a. Ecstasy pills																	tabs		tabs	
1b. Ecstasy powder																	grams		grams	
2. Meth powder (speed/goey/whiz)																	grams		grams	
3. Meth base (paste/pure)																	points		points	
4. Crystal Meth (ice/shabu)																	points		points	
4a. Pharmaceutical stimulants(Ritalin/dex)																	tabs		tabs	
5. Cocaine																	grams		grams	
6. LSD																	tabs		tabs	
7. MDA																	caps		caps	
8. Ketamine																	bumps		bumps	
9. GHB (9GBH/liquid e/ fantasy																	mls		mls	
9a. 1,4b (B, BD, BDO)																	mls		mls	
9b. GBL																	mls		mls	
10. Amyl nitrate (rush)																	snorts		snorts	
11. Nitrous oxide (bulbs)																	bulbs		bulbs	

7. Have you used the following drugs? (cont)

**Interviewer note: Shelving/shafting refers to vaginal/anal administration*

Drug Class Yes = 1, No = 0	Ever used	Age 1st used	Ever inject	Injected last 6 mths	No days inject last 6	Ever Smoke	Smoke 6 mths	Ever snort	Snort 6 mths	Ever Swall	Swall 6 mths	*Ever shelve/ shaft	*Shelve/ shaft 6 mths	No. days used 6 mths
12. Cannabis														
13. Alcohol														
14. Heroin														
15. Methadone														
15a. Buprenorphine														
16. Other opiates (morphine/codeine)														
17 Tobacco														
18. Anti-depressants														
19. Benzodiazepines (eg.serepax/valium)														
20a. Mushrooms														
20. Other (specify)														

7a. What forms of ecstasy have you used in the last six months?
***(NOTE:** *For **Used:** multiple responses allowed & For **Form most used**: mark <u>one</u> response only)*

	Yes = 1 **Used*	**No = 0** ***Form most used*
1a. Ecstasy pills (tablets)		
1b. Ecstasy powder (includes MDMA powder)		

8. (a) In the last six months, have you used any stimulants or party drugs for **more than** 48 hours continuously without sleep?

No .....0 ***(Go to Q9)***
Yes 1

(aa) If yes, how many times have you done this in the past 6 months?

_____ times

8. (b) Which drugs have you done this on in the last six months? *(multiple responses allowed)*

Ecstasy 1
Meth powder (speed/goey/whiz) 2
Meth base (paste/pure) 3
Crystal meth (ice or shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy/1,4B/GBL) 9
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Other 14
(Specify_____)

8. (c) What was the longest period you've done this for in the last six months?

_____Hours

9. When using ecstasy, what combinations of other drugs have you typically used in the last six months?
(Interviewer note: refer back to last column in drug use table 7, p4 for drugs used last 6 mths)

Yes = 1 No = 0	9a. Have you usually used other drugs with ecstasy in the last six months? **Y/N (circle)** *If yes, ask about each drug* *If no, skip to 11b*	9b. Have you usually used other drugs while coming down from ecstasy? **Y/N (circle)** *If yes, ask about each drug* *If no, skip to Section C*
Meth powder (speed)		
Meth base (paste/pure)		
Crystal meth (ice/shabu)		
Any meth*		
Pharm. Stimulant		
Cocaine		
LSD		
Mushrooms		
MDA		
Ketamine		
GHB (GBH/liquid e/fantasy,)		
Amyl nitrate (rush)		
Nitrous oxide (bulbs)		
Cannabis		
Alcohol**	*Usually drink? Y/N* More than 5 standard drinks per session? Y/N	*Usually drink? Y/N* More than 5 standard drinks per session? Y/N
Heroin		
Methadone		
Buprenorphine		
Other opiates		
Tobacco**		
Anti depressants		
Benzodiazepines		
Other (specify_____)		

**Interviewer note: Code any meth if participant does not use any specific from of meth 'usually' but uses at least <u>one</u> form more than two thirds of the time. If this option is coded, no other forms of meth should be coded*
***Prompt for alcohol use and tobacco if participant is a smoker.*

SECTION C: PRICE, PURITY and AVAILABILITY of PARTY DRUGS
These questions are about the price, purity and availability of ecstasy and other party drugs. Please only answer them if you feel confident of your knowledge in this area.

Ecstasy

1. How much does ecstasy cost at the moment?

$_____tab
$_____powder

or
$_____other measure (specify_____)

1a. How much did ecstasy cost the last time you purchased it?

$_____tab
$_____powder

or
$_____other measure (specify_____)

2. Has the price of ecstasy changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

3a. How strong would you say the ecstasy is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of ecstasy changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

5. How easy is it to get ecstasy at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult 1
Stable 2
Easier 3
Fluctuates..... 4

7. Who have you bought ecstasy from in the last six months? *(multiple responses allowed)*

Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues (locations) do you normally score (buy) ecstasy at? *(multiple responses allowed)*

Used not scored.....11
Home 1
Dealer's home.....2
Friend's home 3
Raves/doofs/dance parties 12
Nightclubs 6
Pubs/Bars 7
Private parties.....8
Day Clubs 8a
Street 9
Agreed public location* 13
Work 14
Educational institute.....15
Acquaintances house 16
Other.....10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used ecstasy (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Home 1
Dealer's home.....2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs.....7
Private party.....8
Day Club 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) .14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute.....19
Acquaintances house 20
Other.....12
(Specify_____)

**eg. beach, bushwalking, camping*

***eg. concerts, music festivals etc*

8b. Where were you the last time you used ecstasy? *(one response only)*

Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties..... 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs..... 8a
Restaurant/ café..... 9
Public place (street/park) 10
Car/other vehicle (passenger).... 14
Car /other vehicle (driver)..... 15
Outdoors* 16
Live music event**..... 17
Work..... 18
Educational institute 19
Acquaintances house..... 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

Please remind participants that they do not have to answer any questions that they are uncomfortable answering.

10. How many different people have you purchased ecstasy from in the last 6 months?

_____ people

10a. In the last six months who did you usually purchase ecstasy for?
(one response only)

Didn't buy/get ecstasy in the last six months 0
Yourself 1
Yourself and others..... 2
Other only 3

10b. In the last six months, how often did you purchase ecstasy?
(one response only)

Did not purchase ecstasy in the last six months 0
Monthly or less (1-6 times).... 1
Fortnightly or less (7-12 times) 2
Weekly or less (13-24 times) 3
Three times a week or less (25-181+) 4

10c. When you purchase ecstasy how many tabs (pills) do you usually obtain?

_____amount (tabs/pills)

11. Could you get other drugs from your main dealer in the last six months?
'Main dealer' refers to the person you have most often purchased ecstasy from in the last six months *(Interviewer note: If they have more than one 'main dealer', ask them to refer to the person they have purchased the largest amount of from.)*

No ..... 0 ***Go to Q12***
Yes ..... 1 ***Go to Q11a***
No main source..... 2 ***Go to Q12***

11a. Specify other drugs sold by your main ecstasy dealer *(multiple responses allowed)*
We are only interested in what was available to you at time of purchase, NOT what the dealer said they could get for you if they tried.

	1= Yes 0=No
Meth powder	
Meth base	
Crystal meth	
Pharmaceutical stimulants	
Cocaine	
LSD	
Mushrooms	
MDA	
Ketamine	
GHB	
Cannabis	
Heroin	
Other (Specify_____)	

12. Do you know how much ecstasy you need to be in possession of to be charged with supply if you were caught by the police?

No 0 **(Go to question Q13)**
Yes 1

12a. How much ecstasy (tablets or grams) would you need to be in possession of to be charged with supply if you were caught by the police?

Amount _____ tabs/grams

12b. Is this amount for *(mark only one)*?

Don't know 0
Pure MDMA 1
Tablets sold as ecstasy regardless of MDMA purity 2

13. Do you know what the consequences are for being convicted with supplying ecstasy?

Yes 0
No 1**(Go to Q`14)**

13a. If yes, what are they? *(mark all that apply)*

Fine	0
Caution	1
Prison Sentence	2
Community Service	3
Other_____	4

14. Do you think there is a difference between getting tablets for personal use or for your friends in the eyes of the police?

Yes	0
No	1**(Go to next section)**

14a. If yes, what is the difference?

Don't know	0
Heavier penalty	1
Less of a penalty	2
Same.....	3
Other _____..	4

Methamphetamine powder (speed/goey/whiz)

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does speed cost at the moment?

$_____/gram
or
$_____other measure (specify_____)

1a. How much did speed cost the last time you purchased it?

$_____/gram
or
$_____other measure (specify_____)

2. Has the price of speed changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say speed is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of speed changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get speed at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult..... 1
Stable 2
Easier 3
Fluctuates..... 4

7. Who have you bought speed from in the last six months? *(multiple responses allowed)*

Haven't used speed 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score speed at? *(multiple responses allowed)*

Haven't used speed 0
Used not scored 11
Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties..... 12
Nightclubs 6
Pubs/Bars..... 7
Private parties 8
Day Clubs..... ..... 8a
Street..... 9
Agreed public location* 13
Work..... 14
Educational institute 15
Acquaintances house..... 16
Other 10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used speed (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Haven't used speed 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) . 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

8b. Where were you the last time you used speed? *(one response only)*

Haven't used speed 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) . 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

Methamphetamine base (paste/pure)
Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does base cost at the moment?
$_____/point
or
$_____other measure (specify_____)

1a. How much did base cost the last time you purchased it? $_____/point
or
$_____other measure (specify _____)

2. Has the price of base changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say base is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4 Has the strength of base changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get base at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult..... 1
Stable..... 2
Easier..... 3
Fluctuates..... 4

7. Who have you bought base from in the last six months? *(multiple responses allowed)*

Haven't used base 0
Used not scored..... 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score base at? *(multiple responses allowed)*

Haven't used base 0
Used not scored.. 11
Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties..... 12
Nightclubs 6
Pubs/Bars..... 7
Private parties 8
Day Club 8a
Street..... 9
Agreed public location* 13
Work..... 14
Educational institute 15
Acquaintances house..... 16
Other 10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used base (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Haven't used base 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Club 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

8b. Where were you the last time you used base? *(one response only)*

Haven't used base 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Club 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

Crystal Methamphetamine (crystal/ice/shabu)

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does crystal meth cost at the moment?
$_____/point
or
$_____other measure (specify_____)

1a. How much did crystal meth cost the last time you purchased it?
$_____/point
or
$_____other measure (specify_____)

2. Has the price of crystal meth changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say crystal meth is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of crystal meth changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get crystal meth at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult..... 1
Stable 2
Easier 3
Fluctuates..... 4

7. Who have you bought crystal meth from in the last six months? *(multiple responses allowed)*

Haven't used crystal..... 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score crystal meth at? *(multiple responses allowed)*

Haven't used crystal..... 0
Used not scored 11
Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties.... 12
Nightclubs 6
Pubs/Bars..... 7
Private parties 8
Day Clubs..... 8a
Street..... 9
Agreed public location* 13
Work..... 14
Educational institute 15
Acquaintances house..... 16
Other 10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used crystal meth (ie where have you spent time while under the influence) ? (*read out all locations; record all that apply)*

- Haven't used crystal 0
- Home 1
- Dealer's home 2
- Friend's home 3
- Raves/doofs/dance parties 13
- Nightclubs 6
- Pubs 7
- Private party 8
- Day Clubs 8a
- Restaurant/ café 9
- Public place (street/park) 10
- Car/other vehicle (passenger) ... 14
- Car /other vehicle (driver) 15
- Outdoors* 16
- Live music event** 17
- Work 18
- Educational institute 19
- Acquaintances house 20
- Other 12
- (Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used crystal? *(one response only)*

- Haven't used crystal 0
- Home 1
- Dealer's home 2
- Friend's home 3
- Raves/doofs/dance parties 13
- Nightclubs 6
- Pubs 7
- Private party 8
- Day Clubs 8a
- Restaurant/ café 9
- Public place (street/park) 10
- Car/other vehicle (passenger) 14
- Car /other vehicle (driver) 15
- Outdoors* 16
- Live music event** 17
- Work 18
- Educational institute 19
- Acquaintances house 20
- Other 12
- (Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

Cocaine

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does cocaine cost at the moment?
$_____/gram
or
$_____other measure (specify_____)

1a. How much did cocaine cost the last time you purchased it? $_____/gram
or
$_____other measure (specify_____)

2. Has the price of cocaine changed in the last six months?

Don't know 0
Increasing 1
Stable 2
Decreasing 3
Fluctuates 4

3. How strong would you say cocaine is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of cocaine changed in the last six months?

Don't know 0
Increasing 1
Stable 2
Decreasing 3
Fluctuates 4

5. How easy is it to get cocaine at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult 4

6. Has this changed in the last 6 months?

Don't know 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

7. Who have you bought cocaine from in the last six months? *(multiple responses allowed)*

Haven't used cocaine 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score cocaine at? *(multiple responses allowed)*

Haven't used cocaine 0
Used not scored 11
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 12
Nightclubs 6
Pubs/Bars 7
Private parties 8
Day Clubs 8a
Street 9
Agreed public location* 13
Work 14
Educational institute 15
Acquaintances house 16
Other 10
(Specify_____)
**eg. car, car park, train station, park*

8a. In the last six months where have you usually used cocaine (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Haven't used cocaine 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) ... 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used cocaine? *(one response only)*

Haven't used cocaine 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

LSD/Trips

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does LSD *(trips)* cost at the moment? $_____/tab
or
$_____other measure (specify_____)

1a. How much did LSD cost the last time you purchased it? $_____/tab
or
$_____other measure (specify_____)

2. Has the price of trips changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say trips are at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of trips changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get trips at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult.....4

6. Has this changed in the last six months?

Don't know 0
More difficult.....1
Stable 2
Easier 3
Fluctuates.....4

7. Who have you bought LSD from in the last six months? *(multiple responses allowed)*

Haven't used LSD 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score LSD at? *(multiple responses allowed)*

Haven't used LSD 0
Used not scored 11
Home.....1
Dealer's home 2
Friend's home.....3
Raves/doofs/dance parties....12
Nightclubs 6
Pubs/Bars.....7
Private parties 8
Day Clubs.....8a
Street.....9
Agreed public location* 13
Work.....14
Educational institute 15
Acquaintances house.....16
Other 10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used LSD? (ie where have you spent time while under the influence) (*read out all locations; record all that apply)*

Haven't used LSD 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used LSD? *(one response only)*

Haven't used LSD 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

MDA

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does MDA cost at the moment? $_____/cap
or
$_____other measure (specify_____)

1a. How much did MDA cost the last time you purchased it? $_____/cap
or
$_____other measure (specify_____)

2. Has the price of MDA changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say MDA is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of MDA changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get MDA at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult..... 1
Stable 2
Easier 3
Fluctuates..... 4

7. Who have you bought MDA from in the last six months? *(multiple responses allowed)*

Haven't used MDA 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score MDA at? *(multiple responses allowed)*

Haven't used MDA 0
Used not scored 11
Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties.... 12
Nightclubs 6
Pubs/Bars..... 7
Private parties 8
Day Clubs..... 8a
Street..... 9
Agreed public location..... 13
Work..... 14
Educational institute 15
Acquaintances house..... 16
Other 10
(Specify_____)

**eg. car, car park, train station, park*

8a. In the last six months where have you usually used MDA (ie where have you spent time while under the influence) ? (*read out all locations; record all that apply)*

- Haven't used MDA 0
- Home 1
- Dealer's home 2
- Friend's home 3
- Raves/doofs/dance parties 13
- Nightclubs 6
- Pubs 7
- Private party 8
- Day Clubs 8a
- Restaurant/ café 9
- Public place (street/park) 10
- Car/other vehicle (passenger) 14
- Car /other vehicle (driver) 15
- Outdoors* 16
- Live music event** 17
- Work 18
- Educational institute 19
- Acquaintances house 20
- Other 12
- (Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used MDA? *(one response only)*

- Haven't used MDA 0
- Home 1
- Dealer's home 2
- Friend's home 3
- Raves/doofs/dance parties 13
- Nightclubs 6
- Pubs 7
- Private party 8
- Day Clubs 8a
- Restaurant/ café 9
- Public place (street/park) 10
- Car/other vehicle (passenger) 14
- Car /other vehicle (driver) 15
- Outdoors* 16
- Live music event** 17
- Work 18
- Educational institute 19
- Acquaintances house 20
- Other 12
- (Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

Ketamine (Special K)
Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does ketamine cost at the moment? $_____/gram
or
$_____other measure (specify_____)

1a. How much did ketamine cost the last time you purchased it? $_____/gram
or
$_____other measure (specify_____)

2. Has the price of ketamine changed in the last 6 months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say ketamine is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of ketamine changed in the last 6 months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get ketamine at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult.....4

6. Has this changed in the last 6 months?

Don't know 0
More difficult.....1
Stable 2
Easier 3
Fluctuates.....4

7. Who have you bought ketamine from in the last six months? *(multiple responses allowed)*

Haven't used ketamine.....0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances.....4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score ketamine at? *(multiple responses allowed)*

Haven't used ketamine.....0
Used not scored 11
Home.....1
Dealer's home 2
Friend's home.....3
Raves/doofs/dance parties....12
Nightclubs 6
Pubs/Bars.....7
Private parties 8
Day Clubs.....8a
Street.....9
Agreed public location* 13
Work.....14
Educational institute 15
Acquaintances house.....16
Other 10
(Specify_____)
**eg. car, car park, train station, park*

8a. In the last six months where have you usually used ketamine (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Haven't used ketamine 0
Home 1
Dealer's home..... 2
Friend's home 3
Raves/doofs/dance parties ... 13
Nightclubs 6
Pubs..... 7
Private party..... 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park)..... 10
Car/other vehicle (passenger)14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute..... 19
Acquaintances house 20
Other..... 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used ketamine? *(one response only)*

Haven't used ketamine..... 0
Home.....1
Dealer's home 2
Friend's home.....3
Raves/doofs/dance parties.....13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs.....8a
Restaurant/ café.....9
Public place (street/park) 10
Car/other vehicle (passenger)....14
Car /other vehicle (driver).....15
Outdoors* 16
Live music event**.....17
Work.....18
Educational institute 19
Acquaintances house.....20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

GHB (GBH, liquid e, fantasy, blue)

Again, please only answer if you feel confident of your knowledge in this area.

Note to interviewer:
Participant able to answer? Y/N (circle)
If yes, ensure all questions coded

1. How much does GHB cost at the moment? $_____/mls
or
$_____other measure (specify_____)

1a. How much did GHB cost the last time you purchased it? $_____/mls
or
$_____other measure (specify_____)

2. Has the price of GHB changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

3. How strong would you say GHB is at the moment?

Don't know 0
Low 1
Medium 2
High 3
Fluctuates 4

4. Has the strength of GHB changed in the last six months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuates 4

5. How easy is it to get GHB at the moment?

Don't know 0
Very easy 1
Easy 2
Difficult 3
Very difficult..... 4

6. Has this changed in the last six months?

Don't know 0
More difficult..... 1
Stable 2
Easier 3
Fluctuates..... 4

7. Who have you bought GHB from in the last six months? *(multiple responses allowed)*

Haven't used GHB 0
Used not scored 7
Friends 1
Known dealers 2
Workmates 3
Acquaintances..... 4
Unknown dealers 5
Other 6
(Specify_____)

8. What venues do you normally score GHB at? *(multiple responses allowed)*

Haven't used GHB 0
Used not scored 11
Home..... 1
Dealer's home 2
Friend's home..... 3
Raves/doofs/dance parties.... 12
Nightclubs 6
Pubs/Bars..... 7
Private parties 8
Day Clubs..... 8a
Street..... 9
Agreed public location* 13
Work..... 14
Educational institute 15
Acquaintances house..... 16

Other 10
(Specify_____)
eg. car, car park, train station, park

8a. In the last six months where have you usually used GHB (ie where have you spent time while under the influence)? (*read out all locations; record all that apply)*

Haven't used GHB 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) ... 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals*

8b. Where were you the last time you used GHB? *(one response only)*

Haven't used GHB 0
Home 1
Dealer's home 2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs 7
Private party 8
Day Clubs 8a
Restaurant/ café 9
Public place (street/park) 10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute 19
Acquaintances house 20
Other 12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festival*

Cannabis

Again, please only answer these questions if you are confident of your knowledge in this area.

Note to interviewer:
Participant able to answer this section on Hash/Hash Oil? Y/N (circle)
If yes, ensure all questions coded

Hash and Hash Oil

Bought this amt?		
Yes	**No**	1b. Have you bought any **hash** or **hash oil** in the last 6 months? *(if so ask amount and how much they paid for each from last time they* bought it) **(single figure only here – no ranges)**
Circle response		
		- a gram of hash .....$_____gram
1	**0**	
		- a cap of hash oil.....$_____cap
1	**0**	

Hydro

Note to interviewer:
Participant able to answer this section on Hydro? Y/N (circle)
If yes, ensure all questions coded

Able to answer?		
Yes	**No**	1. How much does **hydro** cost at the moment? (can put ranges here)
		$_____gm
Circle response		
1	**0**	$_____ounce
		Other amt ____$_____
1	**0**	

1a. What amounts of **hydro** have you bought I the last 6 months?
[*Record amounts – if have not bought that amount in last 6 months circle no and leave $ blank*]

Bought this amt?		
Yes	**No**	What did you pay **last time** you bought each amount? **(single figure only here – no ranges)**
Circle response		
1	**0**	$_____gram
1	**0**	$_____2 gms
1	**0**	$_____3 gms
1	**0**	$_____'bag'
1	**0**	$_____quarter ounce
1	**0**	$_____half ounce
1	**0**	$_____ounce

2. Has the price of hydro **changed in the last six months?**

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

3. How strong would you say **hydro** is at the moment?

Don't know 0
High 1
Medium 2
Low 3
Fluctuates 4

4. Has the strength of **hydro** changed in the last 6 months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

5. How easy is it to get **hydro** at the moment?

Don't know 0
Very easy..... 1
Easy..... 2
Difficult..... 3
Very difficult 4
.....

6. Has this changed in the last 6 months?

Don't know 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

7a. Who have you bought hydro from in the last six months? *(multiple responses allowed)*

Don't use..... 0
Street dealer 1
Friends..... 2
Gift from friend 3
Known dealers 4
Workmates..... 5
Acquaintances 6
Unknown dealers 7
Other..... 8
(Specify_____)

7b. What venues (locations) do you normally score (buy) hydro at? *(multiple responses allowed)*

Don't use 0
Home delivery 1
Dealer's home 2
Friend's home 3
Acquaintance's house 4
Mobile dealer..... 5
Street market..... 6
Agreed public location* 7
Work..... 8
Other 9
(Specify_____)

**eg. car, car park, train station, park*

WA keeping following two questions; optional for other jurisdictions

9. Last time you used either **hydro**, as far as you know, what was the original source?

Don't know 0
Grew own..... 1
Smalltime 'backyard'user/grower 2
Large scale cultivator/supplier
(eg crime syndicate,bikie gangs etc)..... 3
Other (specify)_____

***If did not answer 'Don't know'*,**

10. How sure of that are you?

Very sure.....1
Moderately sure 2
Moderately unsure 3

Very unsure.....4

Bush

Note to interviewer:
Participant able to answer this section on Bush? Y/N (circle)
If yes, ensure all questions coded

Able to answer? **Yes**	**No**	
		1. How much does **bush** cost at the moment? (can put ranges here)
		$_____gm
Circle response		
1	**0**	$_____ounce
1	**0**	Other amt ____$_____

1a. What amounts of **bush** have you bought I the last 6 months?
[*Record amounts – if have not bought that amount in last 6 months circle no and leave $ blank*]

Bought this amt? **Yes**	**No**	
Circle response		What did you pay **last time** you bought each amount? **(single figure only here – no ranges)**
1	**0**	$_____gram
1	**0**	$_____2 gms
1	**0**	$_____3 gms
1	**0**	$_____'bag'
1	**0**	$_____quarter ounce
1	**0**	$_____half ounce
1	**0**	$_____ounce

2. Has the price of bush **changed in the last six months?**

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

3. How strong would you say **bush** is at the moment?

Don't know 0
High 1
Medium 2
Low 3
Fluctuates 4

4. Has the strength of **bush** changed in the last 6 months?

Don't know 0
Increasing 1
Stable..... 2
Decreasing..... 3
Fluctuating 4

5. How easy is it to get **bush** at the moment?

Don't know 0
Very easy..... 1
Easy..... 2
Difficult..... 3
Very difficult 4

6. Has this changed in the last 6 months?

Don't know 0
More difficult 1
Stable 2
Easier 3
Fluctuates 4

7a. Who have you bought bush from in the last six months? *(multiple responses allowed)*

Don't use..... 0
Street dealer 1
Friends..... 2
Gift from friend..... 3
Known dealers..... 4
Workmates..... 5
Acquaintances..... 6
Unknown dealers 7
Other 8
(Specify_____)

7b. What venues (locations) do you normally score (buy) bush at? *(multiple responses allowed)*

Don't use..... 0
Home delivery 1
Dealer's home 2
Friend's home 3
Acquaintance's house..... 4
Mobile dealer..... 5
Street market..... 6
Agreed public location* 7
Work..... 8
Other 9
(Specify_____)

**eg. car, car park, train station, park*

WA keeping the following two questions; optional for other jurisdictions

9. Last time you used either **bush**, as far as you know, what was the original source?

Don't know 0
Grew own..... 1
Smalltime 'backyard'user/grower 2
Large scale cultivator/supplier
(eg crime syndicate,bikie gangs etc) 3
Other
(specify)_____

***If did not answer 'Don't know'*,**

10. How sure of that are you?

Very sure..... 1
Moderately sure 2
Moderately unsure 3
Very unsure.....……..4

SECTION C(i): DRUG INFORMATION

The following section asks about how you obtain more information about ecstasy and other party drugs. This includes information about the content and purity of ecstasy and other party drugs and the ways you make your experience with them safer and healthier.

1. How <u>often</u> do you find out what the content and purity is of **other party drugs (excluding ecstasy)** before taking them? *(mark <u>one</u> response only)*

Never 0
Sometimes 1
About half the time 2
Most times.....3
Always.....4

1a. How <u>often</u> do you find out what the content and purity is of **ecstasy** before taking them? *(mark <u>one</u> response only)*

Never .....0***(Go to Q3)***
Sometimes 1
About half the time 2
Most times.....3
Always.....4

2. How <u>do</u> you find out about the content and purity of **ecstasy** <u>before</u> you take them? *(mark all that apply).*

I don't ..... 0 (Go to Q2b)
Dealer ..... 1 (Go to Q2b)
Friends that have taken it already..... ..... 2 (Go to Q2b)
Other people that have taken it already ..... 3 (Go to Q2b)
Personal experience ..... 4 (Go to Q2b)
Information pamphlets ..... 5(specify_____) (Go to Q2b)
Websites ..... 6(specify_____) (Go to Q2b)
Testing kits 7(specify_____) (*Go to Q2a)*
Other ..... 8(specify_____) (Go to Q2b**)**

2a. **If yes to using 'testing kits' in Q2, how often do you test your ecstasy before taking it? *(mark <u>one</u> response only)*

Sometimes 1
About half the time 2
Most times.....3
Always.....4

2b. Are you aware of any limitations of pill-testing methods such as reagent tests? *(to be answered by all respondents)*

No 0
Yes .....1(Specify_____)

2c. Would you still take the pill if pill testing *(circle answer)*: *(to be answered by all respondents)*

(i) indicated that it contained an ecstasy-like substance (MDMA, MDA etc)? ... Yes/No
(ii) indicated that it contained an amphetamine- type substance? ..... Yes/No
(iii) indicated that it's ketamine? ..... Yes/No
(iv) ...indicated that it contained opiates Yes/No
(v) that it contained 2CB/2CI? Yes/No
(vi) that it contained PMA? Yes/No
(vii) that it contained DXM? Yes/No
(viii) showed no reaction (ie. begin substance and/ or unknown substance) Yes/No

3. In the last 6 months, how often have you bought a drug and it has turned out to have a different content or purity than you expected? *(mark <u>one</u> response only)*

Never 0
Sometimes 1
About half the time 2
Most times 3
Always 4

4. Which of the following information resources would **you** personally find useful if available locally? *(mark all that apply).*

None 0
Information pamphlets 1
Posters 2
Postcards 3
Music CDs 4
Video/DVDs 5
Local website 6
Testing kits 7
Venue outreach workers (at events) 8
Other 9
(Specify_____)

5. Can you tell me how much you agree with the following statements?
(answer each question – prompt for categories 0-4)

0 = Strongly agree 1 = Agree 2 = Neutral 3 = Disagree 4 = Strongly Disagree

5a	Logos are a good indication of what the tablet/pill will be like?	
5d.	I do not care what is in the ecstasy tabs I take, so long as I have a good time?	
5e.	Using ecstasy should be legal?	
5f.	Selling ecstasy should be legal?	
5g.	I know what is in the pills I take.	

SECTION D:

(i) AUDIT

These questions are related to your use of alcohol. Remember, any information you provide is completely confidential.

Interviewer note: please write the number in the box on the side

Q1. How often do you have a drink containing alcohol? **0** Never **1** Monthly or less **2** 2-4 times a month **3** 2-3 times a week **4** 4 or more times a week	☐
Q2. How many drinks containing alcohol do you have on a typical day when you are drinking? **0** 1 or 2 **1** 3 or 4 **2** 5 or 6 **3** 7 to 9 **4** 10 or more	☐
Q3. How often do you have six or more drinks on one occasion? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q4. How often during the last year have you found that you were not able to stop drinking once you had started? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q5. How often during the last year have you failed to do what was normally expected from you because of drinking? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q6. How often during the last year have you needed a first drink in the morning to get yourself going, after a heavy drinking session? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q7. How often during the last year have you had a feeling of guilt or remorse after drinking? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q8. How often during the last year have you been unable to remember what happened the night before because you had been drinking? **0** Never **1** Less than monthly **2** Monthly **3** Weekly **4** Daily or almost daily	☐
Q9. Have you or someone else been injured as a result of your drinking? **0** No **2** Yes , but not in last year **4** Yes, during the last year	☐
Q10. Has a relative or friend or doctor or other health worker been concerned about your drinking or suggested you cut down? **0** No **2** Yes , but not in last year **4** Yes, during the last year	☐
Coding only (TOTAL)	☐☐

(ii) Kessler Psychological Distress Scale

These questions are related to how you have been feeling over the last 4 weeks. Remember, any information you provide is completely confidential.

In the last 4 weeks, about how often –

1. Did you feel tired out for no good reason?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

2. Did you feel nervous?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5 **Note: If response 5 chosen, go to Q4**

3. Did you feel so nervous that nothing could calm you down?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

4. Did you feel hopeless?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

5. Did you feel restless or fidgety?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5 **Note: If response 5 chosen, go to Q7**

6. Did you feel so restless that you could not sit still?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

7. Did you feel depressed?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

8. Did you feel that everything was an effort?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

9. Did you feel so sad that nothing could cheer you up?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

10. Did you feel worthless?

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

AISS (Arnett, 1994)

		Describes me very well	Describes me somewhat	Does not describe me very well	Does not describe me at all
1	I can see how it would be interesting to marry someone from a foreign country	A	B	C	D
2	When the water is very cold, I prefer not to swim even if it is hot day	A	B	C	D
3	If I have to wait in a long line, I'm usually patient about it	A	B	C	D
4	When I listen to music, I like it to be loud	A	B	C	D
5	When taking a trip, I think it is best to make as few plans as possible and just take it as it comes.	A	B	C	D
6	I stay away from movies that are said to be frightening or highly suspenseful.	A	B	C	D
7	I think it is fun and exciting to perform or speak before a group	A	B	C	D
8	If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides.	A	B	C	D
9	I would like to travel to places that are strange and far away	A	B	C	D
10	I would never like to gamble with money, even if I could afford it	A	B	C	D
11	I would have enjoyed being one of the first explorers of an unknown land	A	B	C	D
12	I like a movie where there are a lot of explosions and car chases	A	B	C	D
13	I don't like extremely hot and spicy foods.	A	B	C	D
14	In general, I work better when I'm under pressure	A	B	C	D
15	I often like to have a radio or TV on while I'm doing something else, such as reading or cleaning up.	A	B	C	D
16	It would be interesting to see a car accident happen	A	B	C	D
17	I think it's best to order something familiar when eating in a restaurant.	A	B	C	D
18	I like the feeling of standing next to the edge of a high place and looking down.	A	B	C	D
19	If it were possible to visit another planet or the moon for free, I would be among the first in line to sign up.	A	B	C	D
20	I can see how it must be exciting to be in a battle during a war.	A	B	C	D

SECTION E: Effects of party drug use

(i) Benefits and risks of ecstasy use
(ii) Other risk behaviour
(iii) Help seeking behaviour and other problems

(i) Benefits and risks of ecstasy use

Interviewer note: (i) Please attempt to code using options listed (ii) Do not prompt

1. Do you think there are any benefits associated with taking ecstasy?

No .....0 ***(Go to 2)***
Yes .....1 ***(Go to 1a)***
Don't know .....2 ***(Go to 2)***

1a. Can you tell me up to **THREE** of the biggest benefits you perceived to be associated with **YOUR** ecstasy use? *(mark up to three)*

Enhanced closeness/bonding/empathy with others (including friends) 1
Enhanced communication/talkativeness/more social 2
Enhanced mood (eg euphoria/wellbeing/happiness) 3
The high/rush/buzz 4
Increased energy/stay awake 5
Enhanced appreciation of music and/or dance 6
Fun (enjoyable night/good time) 7
Increased confidence/decreased inhibitions 8
Relax/escape/release 9
Drug effects (eg hallucinations/insight/clarity/creativity/heightened senses) 10
Different to effects of alcohol (eg non-violent/safer environment/no hangover) 11
Enhanced sexual experience 12
Feeling in control/ focused 13
Cheap 14
Other (Specify_____) 15

Interviewer note: (i) Please attempt to code using options listed (ii) Do not prompt

2. Do you think there are any risks associated with taking ecstasy?

No ..... 0 ***(Skip to 'Other risk behaviour')***
Yes ..... 1 ***(Go to 2a)***
Don't know ..... 2 ***(Skip to 'Other risk behaviour')***

2a. Can you tell me up to **THREE** of the biggest risks you think are associated with **YOUR** ecstasy use? *(mark up to three)*

Psychological harms
Addiction/dependence.....1
Depression 2
Anxiety/panic.....3
Paranoia.....4
Psychosis 5
Lack of motivation 6
Other psych harm (Specify_____) 7
Neuropsychological harms
Memory impairment 8
Damage to brain function (eg. Brain cells /neurological damage) 9
Cognitive impairment 10
Physical Harms
General acute physical problems (eg. vomiting/headaches/trouble sleeping/weight loss) 11
Dehydration.....12
Over hydration.....13
Body temperature regulation (overheating) 14
Long-term physical problems (eg. cardiac/lungs/ulcers/respiratory/nasal damage).....15
Non-fatal OD (passing out/coma) 16
Fatal overdose (death).....17
Accidents.....18
Other physical harm (Specify_____).....19
Harms related to illicit status
Unknown drug strength/ purity 20
Unknown drug contaminants/ cutting agents.....21
Other (Specify_____).....22
Effects of intoxication
Impaired decision making/risk taking 23
Increased vulnerability 24
Driving risk.....25
Sex risk.....26
Aggression/violent behaviour.....27
Taking more drug than intended 28
Other harms
Legal/police problems 29
Financial problems.....30
Social/relationship problems 31
Employment problems 32
Unknown long-term harm.....33
Lack of knowledge (eg. not being aware of risks/don't know how to use safely) 34
Other harm (Specify_____).....35

(ii) Other risk behaviour

1. Have you ever overdosed (passed out and unable to be woken/fallen into a coma) on any party drugs?

No ..... 0 ***(Skip to 'Driving')***
Yes 1
Don't know ..... 2 ***(Skip to 'Driving')***

1a. How many times have you ever overdosed on any party drug?

_____ times

1aa. Have you overdosed on any party drug in the past 6 months?

No .....0 ***(Skip to 'Driving section')***
Yes .....1 ***(Go to Q1b to 1j)***
Don't know .....2 ***(Skip to 'Driving')***

1b. Specify MAIN drug (*mark only one*)	1c. Specify ALL OTHER drugs used at same time *(mark all that apply)*
Ecstasy 1	No other drug 0
Meth powder (speed/goey/whiz) 2	Ecstasy 1
Meth base (paste/pure)..... 3	Meth powder (speed/goey/whiz).....2
Crystal Meth (ice/shabu) 4	Meth base (paste/pure) 3
Pharmaceutical stimulants 4a	Crystal Meth (ice/shabu).....4
Cocaine..... 5	Pharmaceutical stimulants.....4a
LSD 6	Cocaine 5
Mushrooms……6a	LSD 6
MDA..... 7	Mushrooms……6a
Ketamine..... 8	MDA 7
GHB (GBH/liquid e/fantasy) 9	Ketamine 8
Amyl nitrite 10	GHB (GBH/liquid e/fantasy).....9
Nitrous oxide..... 11	Amyl nitrite.....10
Cannabis..... 12	Nitrous oxide 11
Alcohol 13	Cannabis 12
Heroin 14	Alcohol.....13
Methadone 15	Heroin.....14
Other opiates 16	Methadone 15
Benzodiazepines..... 17	Other opiates.....16
Other 18	Benzodiazepines 17
	Other 18
(Specify_____)	(Specify_____)

1d. How long ago was your most recent overdosed on any party drug?

_____months ***(<= 1 month = 1 etc)***

1e. Last time you overdosed, where were you?

Home 1
Dealer's home.....2
Friend's home 3
Raves/doofs/dance parties 13
Nightclubs 6
Pubs.....7
Private party.....8
Day Club 8a
Restaurant/ café 9
Public place (street/park).....10
Car/other vehicle (passenger) 14
Car /other vehicle (driver) 15
Outdoors* 16
Live music event** 17
Work 18
Educational institute.....19
Acquaintances house 20
Other.....12
(Specify_____)

**eg. beach, bushwalking, camping*
***eg. concerts, music festivals etc*

1f. The last time you overdosed what was the main drug you attribute to your overdose? *(mark only one)*

Ecstasy 1
Meth powder (speed/goey/whiz) 2
Meth base (paste/pure)..... 3
Crystal Meth (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine..... 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine..... 8
GHB (GBH/liquid e/fantasy/1,4B/GBL) ... 9
Amyl nitrite 10
Nitrous oxide..... 11
Cannabis..... 12
Alcohol 13
Heroin 14
Methadone..... 15
Other opiates 16
Benzodiazepines..... 17
Other..... 18
(Specify_____)

1g. The last time you overdosed what other drugs had you taken?
(more than one response allowed)

Ecstasy 1
Meth powder (speed/goey/whiz) 2
Meth base (paste/pure) 3
Crystal Meth (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy/1,4B/GBL) ... 9
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Benzodiazepines 17
Other 18
(Specify_____)

1h. The last time you overdosed on any party drugs, what happened/what treatment did you receive?

On-site help 1
Attended on-site by ambulance 2
Taken by friends to hospital 3
Taken by ambulance to hospital 4
Other 5
(please specify_____)

1i. The last time you overdosed on any party drugs, how long had you been partying before you overdosed? _____hours

1j. The last time you overdosed on any party drugs, how long had it been since you last ate a meal? _____hours

(v) Driving

1a. Have you driven a car in the last 6 months?

No ….0 **(Skip to 'Help Seeking Behaviour)**
Yes ….1 (Go to Q1b)

1b. Have you driven while 'under the influence' (over the limit) of alcohol in the past 6 months?

No……0 **(If no go to Q1d)**
Yes….1 (If yes go to Q1c)

1c. How many times have you driven while 'under the influence' of alcohol in the last 6 months

Number of times_____

1cc. Have you been RBT tested in the last six months? (roadside breath testing)
No ..... 0 **(Skip to Q1d)**
Yes ..... 1 (Go to 1ccc)

1ccc. If yes, were you over the legal limit?
No (never in last six months) ....0 **(Skip to Q1d)**
Yes (one or more times in last six months)..... ..1

1d. Have you driven after taking illicit drug(s) in the last 6 months?

No……..0 **(Skip to Q1m)**
Yes……1 (Go to 1e)

1e. How many times have you driven after taking illicit drug(s) in the last 6 months?

Number of times_____

1f. After which illicit drug(s) have you driven soon after taking in the last six months? *(mark all that apply)*

Ecstasy 1
Methamphetamine powder 2
Methamphetamine base 3
Crystal Methamphetamine 4
Pharmaceutical stimulant 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB 9
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Heroin 14
Methadone 15
Other opiates 16
Benzodiazepines 17
Other 18
(Specify_____)

1g. Last time you drove after taking any illicit drug(s), which drug(s) had you taken? *(mark all that apply)*

Ecstasy 1
Methamphetamine powder 2
Methamphetamine base 3
Crystal Methamphetamine 4
Pharmaceutical stimulant 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB 9
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Heroin 14
Methadone 15
Other opiates 16
Benzodiazepines 17
Other 18
(Specify_____)

1h. Last time you drove after taking any illicit drug(s), how long after taking the drug(s) did you drive?

_____ hours

1i. Last time you drove after taking any illicit drug(s), how impaired did you feel your driving was?

Not at all impaired 0
Slightly impaired..... 1
Moderately impaired 2
Substantially impaired..... 3
Totally impaired..... 4

1j. Have you ever been tested for drug driving by the police roadside drug testing buses (*not an alcohol breath test, but a saliva drug test*)?

No ..... 0 **(Skip to Q1m)**
Yes, once 1
Yes, more than once..... 2

1k. If yes, what was the most recent result?

Negative..... 0 **(Skip to Q1m)**
Positive 1
Inconclusive 2
Don't know/didn't get result..... 3

1l. If your most recent result was positive, what did it test for?

Cannabis..... 1
Amphetamine..... 2
MDMA 3

1m. Nominate the degree of risk you perceive to be associated with driving soon after (within an hour) of taking the following drugs?

0 = don't know 1 = no risk, 2 = low risk 3 = moderate risk 4 = high risk

i.	Over the legal blood alcohol limit	
ii.	Ecstasy	
iii.	Methamphetamine (speed, base, crystal)	
iv.	LSD	
v.	Ketamine	
vi.	GHB	
vii.	Cannabis	
viii.	Benzodiazepines	

(iii) Help seeking behaviour and other problems

I am going to read out a list of medical and health services and want to know if you have accessed them in the last six months <u>in relation to your party drug use</u>.

Note to interviewer:
Eg: Have you accessed first aid in relation to your use of party drugs in the last six months?
<u>If no, code 0 and move to next service. If yes, code 1 and ask:</u>
What was main drug involved/main drug of concern? <u>Use codes from List A below</u> Do not prompt
What was the main issue of concern? <u>Use codes from List B below</u> Do not prompt
Read out all service types

1. Service	Accessed? 1= Yes 0= No	Main drug? (Code from List A below)	Main issue? (Code from List B below)
First aid			
Ambulance			
Emergency department			
Hospitalisation (admitted)			
GP			
Counsellor			
Drug and alcohol worker			
Social/welfare worker			
Psychologist			
Psychiatrist			
Telephone counselling			
Internet counselling			
Other (Specify_____)			

Note to interviewer: Any services accessed? *Y/N* *(Circle. If no, skip and fill in database)*

LIST A - DRUGS FOR CODING PURPOSES:	LIST B - ISSUES FOR CODING PURPOSES:
1 Ecstasy 2 Meth powder (speed) 3 Meth base 4 Crystal meth 4a. Pharmaceutical stimulants 5 Cocaine 6 LSD 6a Mushrooms 7 MDA 8 Ketamine 9 GHB 10 Amyl nitrite 11 Nitrous oxide 12 Cannabis 13 Alcohol 14 Heroin 15 Methadone 16 Other opiates 17 Antidepressants 18 Benzodiazepines 19 Poly drug (2 or more drugs)	1 Overdose 2 Dependence/ addiction 3 Anxiety 4 Depression 5 Aggression/violent behaviour 6 Psychosis 7 Other psychological problems eg. phobias, paranoia 8 Acute physical problems eg. dehydration, heart palpitations 9 Pre existing health condition 10 Information/advice on drug effects (including sustained frequency of use, amount used, combination, withdrawal, contaminants/impurities) 11 Medication prescription 12 Social/ relationship issues 13 Other (Specify_____)

2a. Has your party drug use caused any **relationship/social problems** in the past six months? (i.e. with a partner, friends, family)

No ..... 0 ***(Skip to 3a)***
Yes ..... 1 ***(Go to 2b)***

2b. What was the **main** relationship problem you experienced in the last 6 months?

No relationship problems 0
Arguments 1
Mistrust/anxiety 2
Ending a relationship 3
Violence 4
Kicked out of home 5
Other 6
(Specify _____)

2c. What was the **main** drug you attributed this problem to? *(mark one only)*

No relationship problems 0
Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB 9
Amyl nitrate 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Tobacco 17
Antidepressants 18
Benzodiazepines 19
Polydrug use (more than 2 drugs) 20
Other 21
(Specify_____)

3a. Has your party drug use caused any **financial problems** in the past six months?

No ..... 0 ***(Skip to 4a)***
Yes ..... 1 ***(Go to 3b)***

3b. What was the **main** money problem have you experienced?

No money problems..... 0
No money for recreation/luxuries..... 1
In debt/owing money..... 2
No money for food/rent..... 3
Other 4
(Specify _____)

3c. What was the **main** drug you attributed this problem to? (mark one only)

No financial problems.....0
Ecstasy 1
Methamphetamine powder (speed/goey/whiz).....2
Methamphetamine base (paste/pure).....3
Crystal methamphetamine (ice/shabu).....4
Pharmaceutical stimulants 4a
Cocaine.....5
LSD 6
Mushrooms 6a
MDA 7
Ketamine.....8
GHB 9
Amyl nitrate 10
Nitrous oxide 11
Cannabis.....12
Alcohol 13
Heroin.....14
Methadone 15
Other opiates.....16
Tobacco 17
Antidepressants 18
Benzodiazepines.....19
Polydrug use (more than 2 drugs).....20
Other 21
(Specify_____)

4a. Has your party drug use caused any **legal/police problems** in the past six months?

No ..... 0 ***(Skip to 5a)***
Yes ..... 1 ***(Go to 4b)***

4b. What was the **main** police problem have you experienced?

No legal problems 0
Cautioned by police 1
Arrested 2
Feel like being followed / surveillance by undercover 3
Convicted of a crime 4
Imprisoned 5
Other 6
(Specify _____)

4c. What was the **main** drug you attributed this problem to? (mark one only)

No legal/police problems 0
Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB 9
Amyl nitrate 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Tobacco 17
Antidepressants 18
Benzodiazepines 19
Polydrug use (more than 2 drugs) 20
Other 21
(Specify_____)

5a. Has your party drug use caused any **work/study problems** in the past six months?

No ..... 0 ***(Skip to Section F)***
Yes ..... 1 ***(Go to 5b)***

5b. What was the **main** work/study problem have you experienced?

No work/study problems 0
Trouble concentrating 1
Reduced work performance 2
Unmotivated 3
Sick leave/not attending classes 4
Sacked/quit job/can't find work 5
Other 6
(Specify _____)

5c. What was the **main** drug you attributed this problem to? (mark one only)

No relationship problems 0
Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
Mushrooms 6a
MDA 7
Ketamine 8
GHB 9
Amyl nitrate 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Tobacco 17
Antidepressants 18
Benzodiazepines 19
Polydrug use (more than 2 drugs) 20
Other 21
(Specify_____)

SECTION F: Injecting risk behaviour

Interviewer note: Has participant ever injected? (refer back to Q3, Pg3)

No 0
Yes..... 1
If no, skip to Q17
If yes, say:

You said previously that you have injected a drug at some time. This next section is about injecting behaviour.

1. The first time you injected, were you 'under the influence' of other drugs?

No ..... 0 ***(Skip to Q2)***
Yes..... 1 ***(Go to 1a)***

1a. Specify drugs *(mark all that apply)*:

Ecstasy 1
Methamphetamine powder (speed/goey/whiz) ..2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy).....9
Amyl nitrite.....10
Nitrous oxide 11
Cannabis 12
Alcohol.....13
Heroin.....14
Methadone 15
Other opiates.....16
Benzodiazepines.....17
Other 18
(Specify_____)

2. How did you learn to inject? *(mark all that apply)*

Don't inject self..... 0
Friend/partner 1
Needle Exchange..... 2
Other User 3
Website 4
Information pamphlet 5
Indirectly from a health professional 6
Other 7
(Specify_____)

Interviewer note: Has participant injected in the last six months? (refer back to Table 7, Pg4&5)

No 0
Yes..... 1
If no, skip to Q17
If yes, say:

This next set of questions are about injecting behaviour in the last six months.

3. What was the last drug you injected? *(mark <u>one</u> option only)*

Ecstasy 1
Methamphetamine powder (speed/goey/whiz) ..2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine.....5
LSD.....6
MDA.....7
Ketamine.....8
GHB (GBH/liquid e/fantasy).....9
Heroin 10
Methadone 11
Other opiates 12
Benzodiazepines 13
Steroids.....14
Other.....15
(Specify_____)

4. What places did you inject in the last **six months**? *(read out list, mark all that apply)*

Own home 0
Friends' home 1
Dealers' home..... 2
Street, park or bench 3
Venue toilet (eg. pubs/clubs) 4
Public toilet 5
Sex venue..... 6
Car 7
Commercial injecting room 8
MSIC (NSW only) 9
Other..... 10
(specify_____)

5. Where did you get your needles from in the last **six months**? *(read out list, mark all that apply)*

NSP (needle and syringe program) 0
NSP vending machine 1
Chemist 2
Partner 3
Friend 4
Dealer 5
Other 6

(Specify_____)

6. Did you find it difficult to get new needles in the last **six months**?

No ..... 0 ***(Skip to 7)***
Yes ..... 1 ***(Go to 6a)***

6a. What were the reasons for this? *(mark all that apply)*

Don't know where to get them 0
Opening hours of the service/chemist..... 1
Location of the service/chemist..... 2
Stigma* 3
Can't afford them 4
Other 5

(Specify_____)

**Stigma associated with buying needles from a chemist/accessing NSP*

7. How many times have you injected any drug in the last **six months**?

_____times

8. How many times in the **LAST MONTH** have you used a needle after someone else had already used it? *(mark only <u>one</u>)*

No times 0
One time 1
Two times 2
3-5 times 3
6-10 times 4
More than 10 times 5

What about in the last SIX months:

9. How many times in the last **SIX MONTHS** have you used a needle after someone else had already used it? *(mark only <u>one</u>)*

No times 0
One time 1
Two times 2
3-5 times 3
6-10 times 4
More than 10 times 5

10. How many different people have used a needle before you in the last **six months**? *(mark only <u>one</u>)*

None 0
One person 1
Two people 2
3-5 people 3
6-10 people 4
More than 10 people 5

11. Who were these people? *(mark all that apply)*

No people 0
Regular sex partner 1
Casual sex partner 2
Close friends 3
Acquaintance 4
Other 5
(Specify_____)

12. How many times in the last **six months** has someone used a needle after you had used it? *(mark only <u>one</u>)*

No times 0
One time 1
Two times 2
3-5 times 3
6-10 times 4
More than 10 time 5

13. What injecting equipment have you used after someone else in the last **six months**? *(read out list, mark all that apply)*

No equipment.....0
Spoons or mixing containers.....1
Filters 2
Tourniquets 3
Water 4
Other 5
(Specify_____)

14. Who did you usually inject with in the last **six months**? *(mark all that apply)*

No people.....0
Regular sex partner 1
Casual sex partner.....2
Close friend/s 3
Acquaintance/s 4
Other 5
(Specify_____)

15. How often did you inject yourself in the last **six months**? *(mark only <u>one</u>)*

Every time 0
Often 1
Sometimes 2
Rarely.....3
Never 4

15a If you don't inject yourself, who typically injects you? *(mark all that apply)*

Partner.....1
Friend 2
Family member.....3
Acquaintance.....4
Stranger.....5
Other (Specify_____)

16. Have you injected while 'under the influence' or 'coming down' from ecstasy or other party drugs in the last **six months**? *(mark only <u>one</u>)*

No (neither).....0 ***(SkipQ17)***
No (inject party drugs but not while intoxicated .....1***(SkipQ17)***
Yes, under the influence 2
Yes, coming down 3
Yes, both..... 4

16a. How many times have you done this in the last **six months**?

_____times

Section F(i): Blood Borne Virus Vaccination and Testing

These next questions are about blood borne virus vaccination and testing. Given the sensitive nature of these questions you have the opportunity to complete this section yourself. Again, anything you say is confidential.

IF PARTICIPANT CHOOSES TO SELF-COMPLETE, HAND QUESTIONNAIRE TO THEM NOW AND ASK THEM TO READ FROM BELOW:

Please remember these questions are optional and that you don't have to answer anything you don't want to. If you would like information about blood borne viruses including risk behaviour and where to get tested, remind me at the end of the survey to give you details.

17. Have you ever been vaccinated against hepatitis B?

No .....0 ***(Skip to Q18)***
Yes, didn't finish schedule 1
Yes, completed schedule.....2
Don't know .....3 ***(Skip to Q18)***

17a. What was the MAIN reason for being vaccinated against hepatitis B? *(mark <u>one</u> only)*

At risk (injecting drug use) 0
At risk (sexual) 1
Going overseas.....2
Vaccinated as a child 3
Work.....4
Don't know/can't remember 5
Other 6

(specify_____)

18. Have you ever been tested for hepatitis C?

No .....0 ***(Skip to Q19)***
Yes, in the last year 1
Yes, more than one year ago.....2
Don't know .....3 ***(Skip to Q19)***

18a. What was the result of your last hepatitis C test?

Don't have hep C (negative) 0
Have hep C (positive) 1
Don't know/ Didn't get result 2

19. Have you ever been tested for HIV?

No.....0 ***(Skip to Q20)***
Yes, in the last year.....1
Yes, more than one year ago 2
Don't know.....3 ***(Skip to Q20)***

19a. If yes, what was the result of your last HIV test?

Don't have HIV (negative) 0
Have HIV (positive) 1
Don't know.....2

20. Have you ever had any other sexual health check up, such as a swab, urine or other blood test? (*Note to interviewer: do not code HCV/HIV blood tests)*

No.....0
Yes, in the last year.....1
Yes, more than one year ago 2
Don't know.....3

20a. Have you ever been diagnosed with a sexually transmitted infection (STI) eg. chlamydia, gonorrhoea?

No.....0
Yes, in the last year.....1
Yes, more than one year ago 2
Don't know.....3

Section G: Sexual Risk Behaviour

This next section contains questions about sex. Given the sensitive nature of these questions you have the opportunity to complete this section yourself.

IF PARTICIPANT CHOOSES TO SELF-COMPLETE, HAND QUESTIONNAIRE TO THEM NOW AND ASK THEM TO READ FROM BELOW:

Please remember these questions are optional and that you don't have to answer anything you don't want to. Please note that 'sex' in these questions refers to penetrative sex (the penetration of penis/fist of vagina/anus).

1. How many people have you had penetrative sex with in the **last six months**?

None ..... 0 ***(Skip to Section H)***
One person 1
Two people 2
3-5 people 3
6-10 people 4
More than 10 people 5

2. How often have you used condoms/dams/gloves when having sex with your regular partner(s) in the last **six months**? *(mark only one)*

No regular Partner 0
Every time 1
Often 2
Sometimes 3
Rarely 4
Never 5

3. How often did you use condoms/dams/gloves when you had sex with casual partners in the last **six months**? *(mark only one)*

No casual Partner 0
Every time 1
Often 2
Sometimes 3
Rarely 4
Never 5

4. How many times did you have anal sex in the last **six months**? *(mark only one)*

Not in the last six months 0
Monthly or less (1-6 times) 1
Fortnight or less (7-12 times) 2
Weekly or less (13- 24 times) 3
Three times a week or less (25-72 times) 4
Daily or less (73-180) 5
More than once a day (181+) 6

5. Have you had penetrative sex while using ecstasy or other party drugs in the last six months? *(mark only one)*

No ..... 0 ***(Skip to Section H)***
Yes ..... 1 ***(Go to 5a)***

5a. How many times have you had penetrative sex while using party drugs in the last **six months**? *(mark only one)*

Once 1
Twice 2
3-5 times 3
6-10 times 4
More than 10 times 5

5b. The last time you had sex while using party drugs, what drugs were you using *(mark all that apply)*

Ecstasy 1
Methamphetamine powder (speed/goey/whiz) 2
Methamphetamine base (paste/pure) 3
Crystal methamphetamine (ice/shabu) 4
Pharmaceutical stimulants 4a
Cocaine 5
LSD 6
MDA 7
Ketamine 8
GHB (GBH/liquid e/fantasy) 9
Amyl nitrite 10
Nitrous oxide 11
Cannabis 12
Alcohol 13
Heroin 14
Methadone 15
Other opiates 16
Benzodiazepines 17
Other 18
(Specify_____)

5c. While using party drugs when having sex with a **regular** partner in the last **six months**, how often have you used condoms/dams/gloves? *(mark only <u>one</u>)*

No regular partner 0
Not using with regular partner 1
Every time 2
Often 3
Sometimes 4
Rarely 5
Never 6

5d. While using party drugs when having sex with a **casual** partner in the last **six months**, how often have you used condoms/dams/gloves? *(mark only <u>one</u>)*

No casual partner 0
Not using with casual partner 1
Every time 2
Often 3
Sometimes 4
Rarely 5
Never 6

6. Have you been diagnosed with an STI in the past 12 months?

No 0
Yes 1

6a. If yes, which STI? (mark all that apply)

Gonorrhea 1
Chlamydia .2
Syphilis .3
Other_____ 4

THIS IS THE END OF THE SEXUAL RISK SECTION. PLEASE RETURN QUESTIONNAIRE TO THE INTERVIEWER NOW.

SECTION H: Crime

The next set of questions are about crime in the last month. We don't want to know the details of any of the crimes you've committed, just the types of crime you may have been involved in during the last month. Please remember, your answers are completely confidential.

1. Have you been arrested **in the last 12 months**?

No.....0 ***(Skip to Q3)***
Yes.....1 ***(Go to Q2)***

2. What were you arrested for? (can mark more than one)

Was not arrested.....0
Use/possession.....1
Dealing/trafficking 2
Property crime.....3
Fraud.....4
Violent crime 5
Alcohol and driving.....7
Other drugs and driving 8
Other driving offence.....9
Prostitution 10
Other 6
(Specify_____)

Interviewer note: For each of the following four crime areas, firstly ask the participant if they have committed that type of crime in the last month. If no, skip to the next crime type

Property Crime

3. How often, on average, during the **last month** have you committed a property crime? *(e.g. shoplifting, break and enter, stealing a car, receiving stolen goods)*

No property crime 0
Less than once a week 1
Once a week 2
More than once a week.....3
(but less than daily)
Daily 4

Dealing

4. How often, on average, during the **last month** have you sold drugs to someone FOR CASH PROFIT*?

No drug dealing 0
Less than once a week.....1
Once a week.....2
More than once a week 3
(but less than daily)
Daily.....4

**Interviewer note: cash profit – purchased drugs and on-sold them for a cash profit (more than the amount to cover personal use)*

Fraud

5. How often, on average, during the **last month** have you committed a fraud? *(e.g. forging cheques, forging prescriptions, social security scams, using someone else's credit card)*

No fraud 0
Less than once a week..... 1
Once a week..... 2
More than once a week 3
(but less than daily)
Daily 4

Crimes Involving Violence

6. How often, on average, during the **last month** have you committed a crime involving violence? *(e.g. assault, violence in a robbery, armed robbery, sexual assault, breaking apprehended violence orders)*

No violent crime.....0
Less than once a week.....1
Once a week.....2
More than once a week 3
(but less than daily)
Daily.....4

CRIME TOTAL _____

SECTION J: GENERAL TRENDS

1. In the last six months about what proportion of your friends and acquaintances have used ecstasy?

All 0
Most.....1
About half.....2
A few.....3
None 4

2. Is there anything new happening in drug use among you or your friends in the last six months (eg new drug types, different types of users, increase in drug use by some users)?

No 0
Yes 1

If yes, please specify:

3. Have there been any changes in police activity towards party drug users in the last six months?

Don't know 0
Less activity 1
Stable..... 2
More activity..... 3

If yes, please specify:

4. Has police activity made it more difficult *for you* to score drugs in the last six months?

No 0
Yes 1

4a. Have you seen sniffer dogs in the last 6 months?

No .....0 ***(If no, skip to Q5)***
Yes.....1

4b. How many times have you seen sniffer dogs in the last 6 months?

_____ times

4c. What precautions do you take if you know/hear that sniffer dogs are going to be at an event?

Hide drugs better 0
Purchase drugs at party/event from known source 1
Purchase drugs at party/event from unknown source 2
Decide not to take drugs to that event 3
Other (please specify) _____

4d. Have you had drugs on you when you have seen sniffer dogs at an event?

No 0
Yes.....1

If yes, what did you do when you saw the sniffer dogs?

Dispose of the drugs..... 0
Took them to avoid being detected 1
Caught by the police..... 2
Other (please specify_____)

4d. What would your reaction be if you saw sniffer dogs at an event and had drugs on you?

Dispose of the drugs 0
Take the drugs so they can not be detected 1
Other (please specify) _____

5. Have you participated in this study before?

No .....0 ***(Go to 6)***
Yes.....1 ***(Go to 5a)***
Don't know .....3 ***(Go to 6)***

5a. If yes, when was that?

Don't know 0
1997 1
2000 2
2001 3
2002 4
2003 5
2004 6
2005 7

6. Have you participated in the IDRS (IDU survey) before?

No ..... 0 ***(Go to 7)***
Yes ..... 1 ***(Go to 6a)***
Don't know ..... 3 ***(Go to 7)***

6a. If yes, when was that?

Don't know 0
1995 1
1996 2
1997 3
1998 4
1999 5
2000 6
2001 7
2002 8
2003 9
2004 10
2005 11

7. Any other comments you would like to make about ecstasy or party drugs generally?

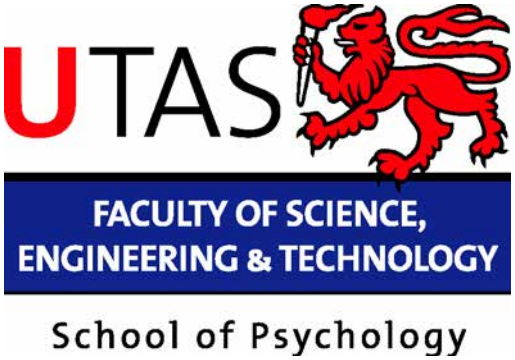
8. Where was respondent recruited from? (*mark only one*)
Internet..... 1
Snowballing 2
Street Press 3
Fliers 4

Other (specify)_____

END OF QUESTIONNAIRE

APPROXIMATELY HOW LONG DID THE INTERVIEW TAKE?

_____ **MINS**



Can personality factors help predict risk-taking and harm reduction behaviour in ecstasy users?

Thank you for your interest in this research. This study is part of a research project conducted by Ashley Lynch (DPsych student) and Dr Raimondo Bruno at the University of Tasmania. This study has been cleared in accordance with the ethical review processes of the University of Tasmania and within the guidelines of the National Statement on Ethical Conduct in Human Research (Approval Number H10474). Your participation is completely voluntary. If you would like more information on any aspect of this study, please email your question(s) to Ashley Lynch at epersonality@psychol.utas.edu.au

What is the purpose of this study?

The purpose of this study is to investigate the relationship between the personality traits of impulsiveness and conscientiousness, and how they may influence risk-taking and risk-mitigating (harm reduction) behaviours in people who regularly use ecstasy.

What will I be asked to do?

Taking part in this study involves completing questionnaires and should take about 30 minutes in total. Questions ask about drug use and health, driving practices and sexual experiences, as well as questionnaires about your personality style.

What are the benefits of participating in this study?

Upon completion you may choose to be entered into a prize draw to win one of three $100 amazon.com gift certificates. Your participation will also assist us to better understand the role that personality plays in risk-taking and harm reduction behaviours. Understanding this will help to develop better harm reduction programs.

Are there any risks associated with participating in this study?

This study involves no more than minimal risk to you, i.e., the level of risk encountered in daily life. No deception is involved in this study. However, should you become

uncomfortable or upset whilst completing the survey, please stop the survey and seek assistance from the following service providers, all operating 24 hours a day, 7 days a week (within Australia):

- Alcohol and Drug Information Service 1 800 811 944
- Life Line 13 11 14
- Turning Point Alcohol and Drug Centre Counselling Service
  1 800 888 236
- If you do not reside in Australia, your may find your local service provider on the International White and Yellow Pages, www.wayp.com

It is also important for you to know that all questions are optional. Please skip any questions in this survey that you feel uncomfortable about answering.

How will confidentiality be maintained and my privacy protected?

Our server uses a 128bit encryption which is backed by Verisign, the world's largest security certificate provider. This is the same level of encryption used by banks and the Australian Tax Office. Therefore, the responses you provide will remain completely anonymous and confidential, as the risk of identification is negligible.

However, you may also choose to use an anonymizer, which will mask your IP address. This will mean that both the computer you are using as well as the responses you provide will be completely unidentifiable. Anonymizers work by insert a fake computer in between your computer and our server, hence masking your IP address. For more information, see:
http://htmlblock.co.uk/anonymous_web_browser/
http://www.torproject.org/
http://www.thefreecountry.com/security/anonymous.shtml

How do I participate?

By signing the following consent form, you indicate that you have read the information on this page and you are agreeing to participate in this research study. If you do not wish to participate, we thank you for your time. If you wish to discontinue your participation at any point during the study, you may choose to do so.

Concerns and Complaints

If you have any questions about this study, please contact Ashley Lynch or Dr Raimondo Bruno at epersonality@psychol.utas.edu.au

This study has been approved by the Tasmanian Social Science Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, you may

contact the Executive Officer of the Human Research Ethics Committee (Tasmania) Network on 03 6226 7479 or human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote Ethics Reference Number H10474.

Consent Form

1. I have read and understood the 'Information Sheet' for this study.
2. I understand the nature and possible effects of this study.
3. I understand that this study involves answering questions about personality, drug use, health, driving practices and sexual experiences.
4. I understand that all questions are optional and that I may choose to not answer any questions that I am uncomfortable with.
3. I understand that all research data will be securely stored on a password protected server at the University of Tasmania.
5. I understand that my participation is voluntary and that I cannot be identified in any way.

Participant Pseudonym:

Pseudonym Signature: Date:

Statement by Investigator

☐ I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

☐ The participant has received the Information Sheet in which my details have been provided so that participants have had opportunity to contact me prior to them consenting to participate in this project.

Name of investigator: Ashley Lynch

Signature of investigator:

Thank you for choosing to participate in this survey. The questions that follow ask about your drug use and health, driving practices, sexual experiences and your personality style. Please answer only those questions that you feel comfortable to answer. All questions are optional and you do not have to answer any questions you do not want to.

About You

Please indicate your sex:
Male ○ Female ○

What is your age? _____

What country do you live in?
Australia ○ Other ○ (please indicate) _____

If in Australia, what state/territory do you live in? (please choose one response only)
ACT ○
NSW ○
NT ○
QLD ○
TAS ○
VIC ○
WA ○

How are you currently employed? (please choose one response only)
Not employed ○
Full time ○
Part time / casual ○
Full time student ○
Full time student + part time / casual work ○
Part time student + part time / casual work ○
Home duties ○

Are you currently in any form of drug treatment? Yes ○ No ○

Have you ever been in prison (i.e., convicted of an offence)? Yes ○ No ○

Which of the following best describes your sexual identity?
(please choose one response only)
Heterosexual ○
Gay male ○
Lesbian ○
Bisexual ○

Drug Use

How old were you when you first tried ecstasy? _____

How have you mainly used ecstasy in the last six months (i.e., more than half the time)? (please choose one response only)
Swallowed ○
Injected ○
Shelved/shafted (vaginal/anal administration) ○
Snorted ○
Smoked ○
Haven't taken ecstasy in the last 6 months ○

If you have not taken ecstasy in the last 6 months, we thank you for your time and information you have provided us thus far. This study is seeking people who have used ecstasy in the last 6 months. If you indicated you have not used ecstasy in the last 6 months, you do not meet eligibility requirements for this study. Thank you again for your time and interest. If you have used ecstasy in the last 6 months, please continue.

Have you ever injected any drug? Yes ○ No ○

What is your main drug of choice (i.e., favourite or preferred drug)? (please choose one response only)
Ecstasy ○
Methamphetamine (e.g., speed, paste, ice) ○
Cocaine ○
LSD ○
Mushrooms ○
Cannabis ○
Alcohol ○
Heroin ○
Benzodiazepines (e.g., sedatives such as Valium, Xanax, Restoril) ○
Other ○ (please indicate) _____

Which of the following drugs have you tried? (please tick all that apply)
Ecstasy ○
Methamphetamine ○
Cocaine ○
LSD ○
Ketamine ○
GHB (e.g., GBL, liquid e, fantasy) ○
Cannabis ○
Alcohol ○
Mushrooms ○

Have you used the following drugs in the last 6 months?

Ecstasy Yes ○ No ○
If yes, how often have you used ecstasy in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

The last time you used ecstasy, how many pills did you take in that session (i.e., the continuous period of use without sleep)? _____

In a typical session when you are using ecstasy, how many pills do you usually take? ____

Methamphetamine Yes ○ No ○
If yes, how often have you used methamphetamine in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

Cocaine Yes ○ No ○
If yes, how often have you used cocaine in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

LSD Yes ○ No ○
If yes, how often have you used LSD in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

Ketamine Yes ○ No ○
If yes, how often have you used ketamine in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

GHB Yes ○ No ○
If yes, how often have you used GHB in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

Cannabis Yes ○ No ○
If yes, how often have you used cannabis in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○

Weekly ○
More than once a week ○

Alcohol Yes ○ No ○
If yes, how often have you used alcohol in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

Mushrooms Yes ○ No ○
If yes, how often have you used mushrooms in the last 6 months?
Less than monthly ○
Monthly ○
Fortnightly ○
Weekly ○
More than once a week ○

Drugs and Health

Please remember all questions are optional and that you do not have to answer any questions you do not want to.

In the last 6 months, have you used any stimulants or related drugs (e.g., ecstasy, amphetamines, cocaine, ketamine, GHB, LSD) for more than 48 hours continuously without sleep? Yes ○ No ○

If yes, how many times have you done this in the last 6 months? _____

On which drugs have you done this in the last 6 months? (please tick all that apply)
Ecstasy ○
Methamphetamine ○
Cocaine ○
LSD ○
Mushrooms ○
MDA ○
Ketamine ○
GHB ○
Amyl nitrite ○
Nitrous oxide ○
Cannabis ○
Alcohol ○
Other ○ (please indicate) _____

In the last 6 months, in a typical session where you are using ecstasy, do you usually (i.e., more than half the time) consume more than 5 standard drinks of alcohol? Yes ○ No ○

In the last 6 months, in a typical session where you are using ecstasy, do you usually (i.e., more than half the time) take any type of methamphetamine? Yes ○ No ○

Have you ever accidentally overdosed on any stimulant drugs (e.g., ecstasy, methamphetamine, cocaine, etc.)? Yes ○ No ○

If yes, has this happened in the last 12 months? Yes ○ No ○

If yes, the last time you overdosed on a stimulant drug, what was the main drug you attribute your overdose to? (please choose one response only)
Ecstasy ○
Methamphetamine ○
Cocaine ○
MDA ○
Other ○ (Please indicate) _____

What other drugs were you also using at that time? (please tick all that apply)
No other drug ○
Ecstasy ○
Methamphetamine ○
Cocaine ○
LSD ○
Mushrooms ○
MDA ○
Ketamine ○
GHB ○
Amyl nitrite ○
Nitrous oxide ○
Cannabis ○
Alcohol ○
Heroin ○
Methadone ○
Other Opiates ○
Benzodiazepines ○
Other ○ (please indicate) _____

How often do you find out the content and purity of ecstasy tablets before you take them?
Never ○
Sometimes○
About half the time ○
Most times ○
Always ○

How often do you find out the content and purity of other party drugs (excluding ecstasy) before you take them?
Never ○
Sometimes○
About half the time ○
Most times ○
Always ○

How often do you use a pill testing kit to find out the content and purity of ecstasy tablets before you take them?

Never ○
Sometimes○
About half the time ○
Most times ○
Always ○

What strategies, if any, have you used in order to minimise the 'comedown' following ecstasy use or to avoid longer-term negative side effects?

	Haven't used this method	Used this method to reduce the 'comedown' only	Used this method to reduce longer-term negative side effects only (i.e., problems in the days or weeks after using)	Used this method to both to reduce 'comedown' as well as reducing longer-term negative side effects
Reduce how often you use ecstasy	○	○	○	○
Decrease the amount of ecstasy taken on each occasion	○	○	○	○
Healthy lifestyle (e.g., sleep, exercise, diet)	○	○	○	○
Drinking water	○	○	○	○
Taking breaks or 'chilling out'	○	○	○	○
Taking other illicit drugs	○	○	○	○
Taking prescription medications	○	○	○	○
Obtain ecstasy pills from a reliable source	○	○	○	○
Purchase fewer ecstasy pills per occasion	○	○	○	○

Have you ever engaged in preloading (i.e., taking vitamins or other products) before using ecstasy? Yes ○ No ○

If yes, how frequently have you engaged in preloading before using ecstasy in the last six months?
Rarely ○

One quarter of the time ○
Half the time ○
Three quarters of the time ○
Always ○
I have not engaged in preloading in the last 6 months ○

If you have engaged in preloading in the last 6 months, please indicate what substances you have used when preloading: (please tick all that apply)
Multivitamins ○
5-HTP ○
Magnesium ○
Fruit or fruit juice ○
Vitamin B Complex ○
Vitamin C ○
Vitamin E ○
ALA ○
Guarana or energy drink ○
Antidepressants ○
Milk ○
Other ○ (please indicate) _____

If you have practiced preloading in the last 6 months, please indicate your reason(s) for this: (please tick all that apply)
Reduce 'comedown' ○
Reduce brain damage or neurotoxicity ○
Increase the pleasurable effects of ecstasy ○
Reduce negative side effects ○
Prevent fatigue, getting ill or feeling run down ○
Worth a try ○
Other ○ (please indicate) _____

Have you ever engaged in postloading (i.e., taking vitamins or other products) after using ecstasy? Yes ○ No ○

If yes, how frequently have you engaged in postloading after using ecstasy in the last six months?
Rarely ○
One quarter of the time ○
Half the time ○
Three quarters of the time ○
Always ○
I have not engaged in postloading in the last 6 months ○

If you have engaged in postloading in the last 6 months, please indicate what substances you have used when postloading: (please tick all that apply)
Multivitamins ○
5-HTP ○
Magnesium ○
Fruit or fruit juice ○
Vitamin B Complex ○

Vitamin C ○
Vitamin E ○
ALA ○
Guarana or energy drink ○
Antidepressants ○
Milk ○
Sleeping tablets ○
St. John's Wort ○
Turkey ○
Other ○ (please indicate) _____

If you have practiced postloading in the last 6 months, please indicate your reason(s) for this: (please tick all that apply)
Reduce 'comedown' ○
Reduce brain damage or neurotoxicity ○
Increase the pleasurable effects of ecstasy ○
Reduce negative side effects ○
Prevent fatigue, getting ill or feeling run down ○
Worth a try ○
Other ○ (please indicate) _____

Driving

Please remember all questions are optional and that you do not have to answer any questions you do not want to.

Have you driven a motor vehicle in the last 6 months? Yes ○ No ○
If no, please skip ahead to the *Sexual Experiences* part of the questionnaire
If yes, please continue with the below questions

Have you driven while under the influence of alcohol (i.e., over the legal limit) in the last 6 months? Yes ○ No ○

Have you driven soon after taking illicit drugs in the last 6 months? Yes ○ No ○

If yes, how many times have you driven after taking illicit drugs in the last 6 months? ____

After which illicit drugs have you driven soon after taking in the last 6 months?
(please tick all that apply)
Ecstasy ○
Methamphetamine ○
Cocaine ○
LSD ○
Mushrooms ○
MDA ○
Ketamine ○
GHB ○
Amyl nitrite ○
Nitrous oxide ○
Cannabis ○
Heroin ○

Methadone ○
Other opiates ○
Benzodiazepines ○
Other ○ (please indicate) _____

The last time you drove after taking illicit drugs, how do you think it impacted on your driving ability?
Quite impaired ○
Slightly impaired ○
No impact ○
Slightly improved ○
Quite improved ○

Below is a list of statements. Please tick the circle to indicate your opinion about each statement. There are no right or wrong answers.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I would get in the car with a driver who has been drinking if I knew and trusted him or her	○	○	○	○	○
I couldn't live with myself if I hurt another human being in traffic	○	○	○	○	○
I would not even consider riding with a drunk person	○	○	○	○	○
There are many traffic rules which cannot be obeyed in order to keep up the traffic flow	○	○	○	○	○
I would be very unpopular if I should ask the person driving to drive more carefully	○	○	○	○	○
Sometimes it is necessary to ignore violations of traffic rules	○	○	○	○	○
Driving 5 or 10 kms above the speed limit is OK because everyone does it	○	○	○	○	○
Driving-off-the-road accidents are so rare that there is no need to worry	○	○	○	○	○
Sometimes it is necessary to bend the traffic rules to arrive on time	○	○	○	○	○
Sometimes it is necessary to take chances in traffic	○	○	○	○	○
It is acceptable to drive in excess of 110 km/h on a straight road if there are no other vehicles within a km distance	○	○	○	○	○
Driving is more than transportation, it is also speeding and fun	○	○	○	○	○
The risk of dying young in an traffic accident is so low that you can ignore it	○	○	○	○	○

A driver who is speeding is a more attractive person than a driver who always follow the rules	○	○	○	○	○
I might get in the car with a driver who has been drinking	○	○	○	○	○
You should always follow the traffic rules, regardless of the driving conditions	○	○	○	○	○
When people drive they like to be different – not to be ordinary, cautious drivers	○	○	○	○	○
If you have good skills, speeding is OK	○	○	○	○	○
Most people like to show off their skills by driving fast	○	○	○	○	○
I think it's OK to speed if the traffic conditions allow you to do so	○	○	○	○	○
If I should ask my friends to drive more carefully, it would be perceived as hassle	○	○	○	○	○
If I should cause an accident, I hope to be the one who's hurt	○	○	○	○	○
People usually drive faster when their friends are in the car	○	○	○	○	○
It is better to drive smoothly than always to follow the traffic rules	○	○	○	○	○
If you are a safe driver, it is acceptable to exceed the speed limit by 10 km/h in areas where it is permitted to drive at 80–90 km/h	○	○	○	○	○
Adolescents have a need for fun and excitement in traffic	○	○	○	○	○
Hurting someone else with my car would scar me for life	○	○	○	○	○
Drunk driving is not as risky as people think it is	○	○	○	○	○
Sometimes it is necessary to bend the rules to keep traffic going	○	○	○	○	○
Speeding and excitement belong together when you are driving	○	○	○	○	○
A person who take chances and violates some traffic rules is not necessarily a less safe driver	○	○	○	○	○
Sometimes it is necessary to break the traffic rules in order to get ahead	○	○	○	○	○
Boys prefer girls who dare to get into a car when you are speeding	○	○	○	○	○
You should always obey laws while driving	○	○	○	○	○
It is more important to keep up the	○	○	○	○	○

traffic flow rather than always follow the traffic rules					
How often do you:	Never	Rarely	Some times	Often	Very Often
Exceed the speed limit in built-up areas (by more than 10 km/h)	○	○	○	○	○
Exceed the speed limit on country roads (by more than 10 km/h)	○	○	○	○	○
Drive through an amber light when it is about to turn red	○	○	○	○	○
Disregard a red light on an empty road	○	○	○	○	○
Overtake the car in front when it is driving at the speed limit	○	○	○	○	○
Drive too close to the car in front	○	○	○	○	○
Drive the wrong way down a one-way street	○	○	○	○	○
Drive fast because the opposite sex enjoys it	○	○	○	○	○
Ignore traffic rules to in order to get ahead in traffic	○	○	○	○	○
Bend the traffic rules in order to get ahead in traffic	○	○	○	○	○

Sexual Experiences

Please remember all questions are optional and that you do not have to answer any questions you do not want to.

Have you ever been tested for HIV? Yes ○ No ○

Have you ever had any other sexual health check up, such as a swab, urine or other blood test? Yes ○ No ○

Have you ever been diagnosed with a sexually transmitted infection? Yes ○ No ○

How many people have you had penetrative sex with in the last 6 months?
None ○
One person ○
Two people ○
3-5 people ○
6-10 people ○
More than 10 people ○

Have you had penetrative sex with a casual partner in the last six months? Yes ○ No ○

If yes, have you had penetrative sex with a casual partner while using ecstasy or other party drugs in the last 6 months? Yes ○ No ○

If yes, on these occasions where you had penetrative sex with a casual partner *but had not used ecstasy or other party drugs*, how often did you use condoms/dams/gloves?

Every time ○
Often ○
Sometimes ○
Rarely ○
Never ○
Only had sex when using ecstasy or other party drugs ○

If yes, on these occasions where you had penetrative sex with a casual partner *and had used ecstasy or other party drugs*, how often did you use condoms/dams/gloves?
Every time ○
Often ○
Sometimes ○
Rarely ○
Never ○

Below is a list of statements. Please tick the circle to indicate your opinion about each statement. There are no right or wrong answers.

	Almost Never	Rarely	Sometimes	Often	Almost Always
It is a hassle to use condoms	○	○	○	○	○
Condoms interfere with romance	○	○	○	○	○
People can get the same pleasure from “safer” sex as from unprotected sex	○	○	○	○	○
The sensory aspects (smell, touch, etc.) of condoms make them unpleasant	○	○	○	○	○
The idea of using a condom doesn’t appeal to me	○	○	○	○	○
I think “safer” sex would get boring fast	○	○	○	○	○
Condoms ruin the natural sex act	○	○	○	○	○
My sexual experiences do not put me at risk for HIV/AIDS	○	○	○	○	○
With condoms, you can’t really “give yourself over” to your partner	○	○	○	○	○
If I had sex and I told my friends that I did not use condoms, they would be angry or disappointed	○	○	○	○	
If I had a date, I would probably not drink alcohol or use drugs.	○	○	○	○	○
If a friend knew that I might have sex on a date, he/she would ask me if I were carrying a condom	○	○	○	○	○
When I socialise, I usually drink alcohol or use drugs.	○	○	○	○	○
I may have had sex with someone who was at risk for HIV/AIDS	○	○	○	○	○

"Safer" sex reduces the mental pleasure of sex	○	○	○	○	○
My friends talk a lot about "safer" sex	○	○	○	○	○
If a friend knew that I had sex on a date, he/she wouldn't care if I had used a condom or not	○	○	○	○	○
Using condoms interrupts sex play	○	○	○	○	○
There is a possibility that I have HIV/AIDS	○	○	○	○	○
When I think that one of my friends might have sex on a date, I ask them if they have a condom	○	○	○	○	○
The proper use of a condom could enhance sexual pleasure	○	○	○	○	○
If I thought that one of my friends had sex on a date, I would ask them if they used a condom	○	○	○	○	○
Condoms are irritating	○	○	○	○	○
My friends and I encourage each other before dates to practice "safer" sex	○	○	○	○	○
I am at risk for HIV/AIDS.	○	○	○	○	○
Generally, I am in favour of using condoms	○	○	○	○	○

Personality Questions

Listed below are 10 statements that describe people's behaviour. Please use the rating scale to indicate how accurately each statement describes you. Describe yourself as you honestly see yourself and how you generally are now, not how you wish to be in the future.

	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
I try to forgive and forget	○	○	○	○	○
I return extra change when a cashier makes a mistake	○	○	○	○	○
I like to be of service to others	○	○	○	○	○
I act according to my conscience	○	○	○	○	○
I anticipate the needs of others	○	○	○	○	○
I take others' interests into account	○	○	○	○	○
I am polite to strangers	○	○	○	○	○
I am able to cooperate	○	○	○	○	○

with others					
I appreciate people who wait on me	○	○	○	○	○
I try not to think about the needy	○	○	○	○	○

Listed below are statements that people may either agree or disagree with. For each item, indicate how much you agree or disagree with what the item says. Choose only one response to each statement. Please be as accurate and honest as you can be. Respond to each item as if it were the only item. That is, don't worry about being "consistent" in your responses.

	Very true for me	Somewhat true for me	Somewhat false for me	Very false for me
Even if something bad is about to happen to me, I rarely experience fear or nervousness.	○	○	○	○
I go out of my way to get things I want.	○	○	○	○
When I'm doing well at something I love to keep at it.	○	○	○	○
I'm always willing to try something new if I think it will be fun.	○	○	○	○
When I get something I want, I feel excited and energized.	○	○	○	○
Criticism or scolding hurts me quite a bit.	○	○	○	○
When I want something I usually go all-out to get it.	○	○	○	○
I will often do things for no other reason than that they might be fun.	○	○	○	○
If I see a chance to get something I want I move on it right away.	○	○	○	○
I feel pretty worried or upset when I think or know somebody is angry at me.	○	○	○	○
When I see an opportunity for something I like I get excited right away.	○	○	○	○
I often act on the spur of the moment.	○	○	○	○
If I think something unpleasant is going to happen I usually get pretty "worked up."	○	○	○	○
When good things happen to me, it affects me strongly.	○	○	○	○
I feel worried when I think I have done poorly at something important.	○	○	○	○
I crave excitement and new sensations.	○	○	○	○
When I go after something I use a "no holds barred" approach.	○	○	○	○
I have very few fears compared to my friends.	○	○	○	○
It would excite me to win a contest.	○	○	○	○
I worry about making mistakes.	○	○	○	○

Below is a list of 12 questions. Please tick yes or no in response to each question. Please be as accurate and honest as possible.

	Yes	No
If you say you will do something, do you always keep your promise no matter how inconvenient it might be?	○	○
Are *all* your habits good and desirable ones?	○	○
Do you always practise what you preach?	○	○
Were you ever greedy by helping yourself to more than your share of anything?	○	○
Have you ever blamed someone for doing something you knew was really your fault?	○	○
Have you ever taken anything (even a pin or button) that belonged to someone else?	○	○
Have you ever broken or lost something belonging to someone else?	○	○
Have you ever said anything bad or nasty about anyone?	○	○
As a child, were you ever cheeky to your parents?	○	○
Have you ever cheated at a game?	○	○
Have you ever taken advantage of someone?	○	○
Do you sometimes put off until tomorrow what you ought to do today?	○	○

People differ in the ways they act and think in different situations. Please read each statement and tick the appropriate circle to indicate how well the statement describes you. Do not spend too much time on any statement. Answer quickly and honestly.

	Rarely/ Never	Occasionally	Often	Almost Always/ Always
I plan tasks carefully.	○	○	○	○
I do things without thinking.	○	○	○	○
I make-up my mind quickly.	○	○	○	○
I am happy-go-lucky.	○	○	○	○
I don't "pay attention."	○	○	○	○
I have "racing" thoughts.	○	○	○	○
I plan trips well ahead of time.	○	○	○	○
I am self controlled.	○	○	○	○
I concentrate easily.	○	○	○	○
I save regularly.	○	○	○	○
I "squirm" at plays or lectures.	○	○	○	○
I am a careful thinker.	○	○	○	○
I plan for job security.	○	○	○	○
I say things without thinking.	○	○	○	○
I like to think about complex problems.	○	○	○	○
I change jobs.	○	○	○	○
I act "on impulse."	○	○	○	○
I get easily bored when solving thought problems.	○	○	○	○
I act on the spur of the moment.	○	○	○	○
I am a steady thinker.	○	○	○	○
I change residences.	○	○	○	○

I buy things on impulse.	○	○	○	○
I can only think about one thing at a time.	○	○	○	○
I change hobbies.	○	○	○	○
I spend or charge more than I earn.	○	○	○	○
I often have extraneous thoughts when thinking.	○	○	○	○
I am more interested in the present than the future.	○	○	○	○
I am restless at the theater or lectures.	○	○	○	○
I like puzzles.	○	○	○	○
I am future oriented.	○	○	○	○

Thank you for completing this survey!

Your time and information is greatly appreciated.

To thank you for your participation, you may choose to enter a prize draw to win one of three $100 amazon.com gift vouchers. If you would like to enter this draw, please visit http://www.utas.edu.au/psychol/epersonality.htm and follow the instructions.

Alternatively, to enter the prize draw, you may write your valid email account in the space provided below. Please note that to protect your anonymity, we request that you use an email account that is not connected to your name in any way. If required, you may create an anonymous free account by accessing www.hotmail.com or www.gmail.com

Your email address:
Confirm email address:

The prizes will be randomly drawn on December 1, 2009. If you are successful, you will be contacted by email and provided with information on how to access your online voucher. Winners will be given 7 days to collect their vouchers; any unclaimed prizes will be re-drawn and subsequent winners will be notified.

If you have any further questions or comments regarding this study, please contact Ashley Lynch on epersonality@psychol.utas.edu.au

If you have questions regarding drugs and health, contact the Alcohol and Drug Information Service on 1800 811 944. This is a free call, available 24 hours, 7 days a week within Australia.

Thank you again for your participation.